

1&2. Topography and Climate

Candidates should be able to identify the following on a map:

- the Tropic of Cancer, latitudes 30°N, 36°N, longitudes 64°E, 70°E and 76°E
- the Arabian Sea
- the countries sharing a border with Pakistan, and Pakistan's position in relation to others in South and Central Asia
- the administrative areas of Pakistan
- named cities: Islamabad, Muree, Rawalpindi, Gujranwala, Lahore, Faisalabad, Multan, Sialkot, Peshawar, Chitral, Gilgit, Hyderabad, Karachi, Quetta and Gwadar.
- named landforms: Balochistan Plateau, Sulaiman Range, Safed Koh, Potwar Plateau, Salt Range, Hindu Kush, Karakoram and Himalaya mountain ranges
- named rivers: Indus, Jhelum, Chenab, Ravi, Sutlej, Kabul, Hab and Dasht
- named deserts: Thar, Thal and Kharan.

Candidates should be able to:

- use the appropriate vocabulary when describing the distinguishing features of mountains, plateaux, floodplains and deserts (knowledge of the formation of the natural topography of Pakistan is not required)
- identify and name the above features on a photograph or drawing
- understand the influence of the natural topography on human activities: - steep slopes and flat land on the way that the land is used - mountains and deserts on the road and rail networks
- know the distribution of temperature and rainfall, including monsoon, depressions and convectional rain
- know seasonal and regional variations, and the factors contributing to them, including depressions, thunderstorms and cyclones (typhoons)
- understand the causes of the monsoon (knowledge of the causes of other types of rain is not required)
- describe and explain the characteristics of the climate of the arid, semi-arid, humid and highland regions, including seasonal variations
- know the influence of latitude and longitude on day length and climate
- understand the influence of the climate (both the benefits it brings and the problems it causes) on the economy and on the lives of the people: - the

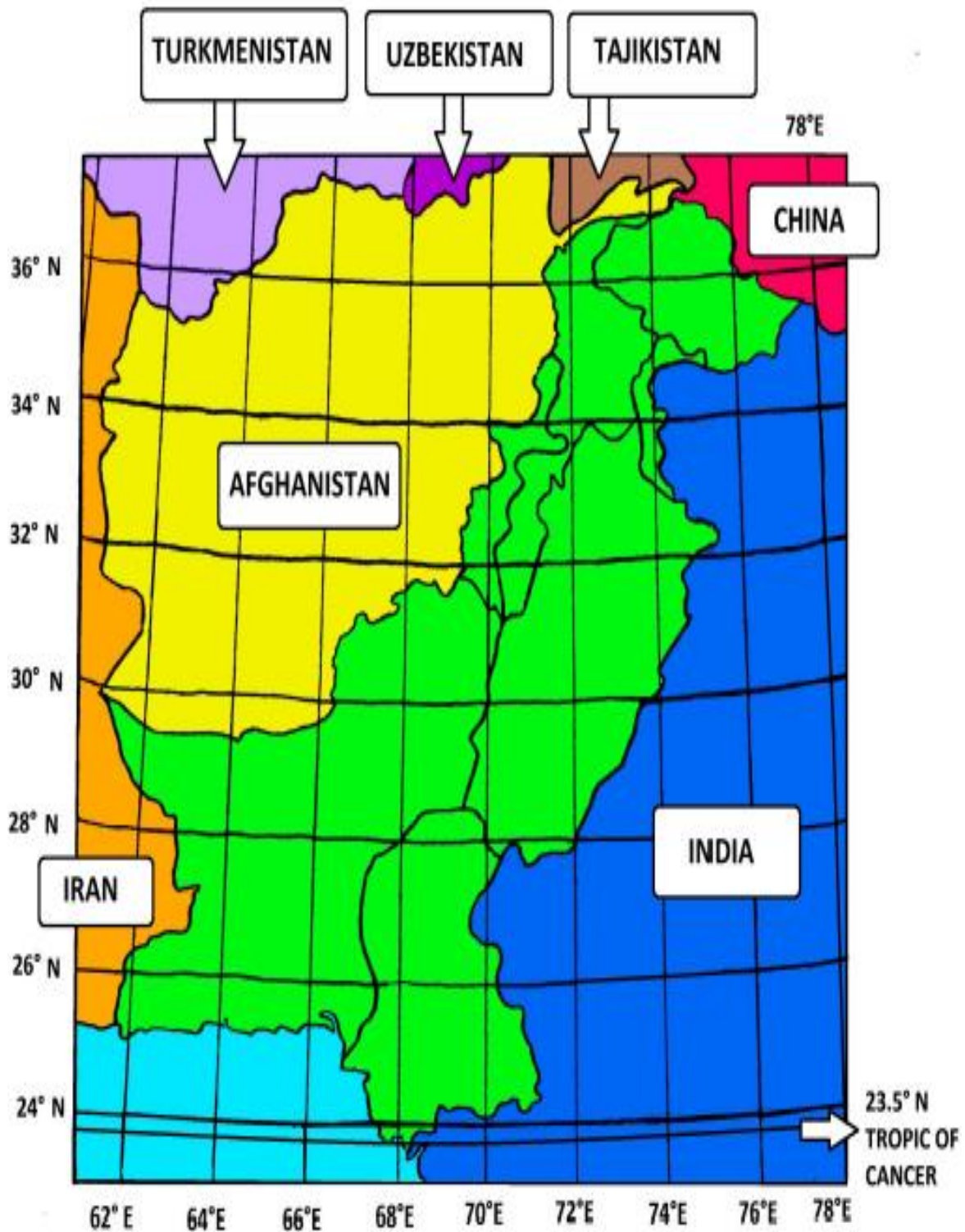


influence of low temperature, ice and snow on the lives of people in the mountains - the influence of rain storms and flooding on agriculture, industry and communications - the problems caused by drought and shortage of water supply on agriculture and industry.

LATITUDES AND LONGITUDES

ARABIAN SEA

OTHER COUNTRIES



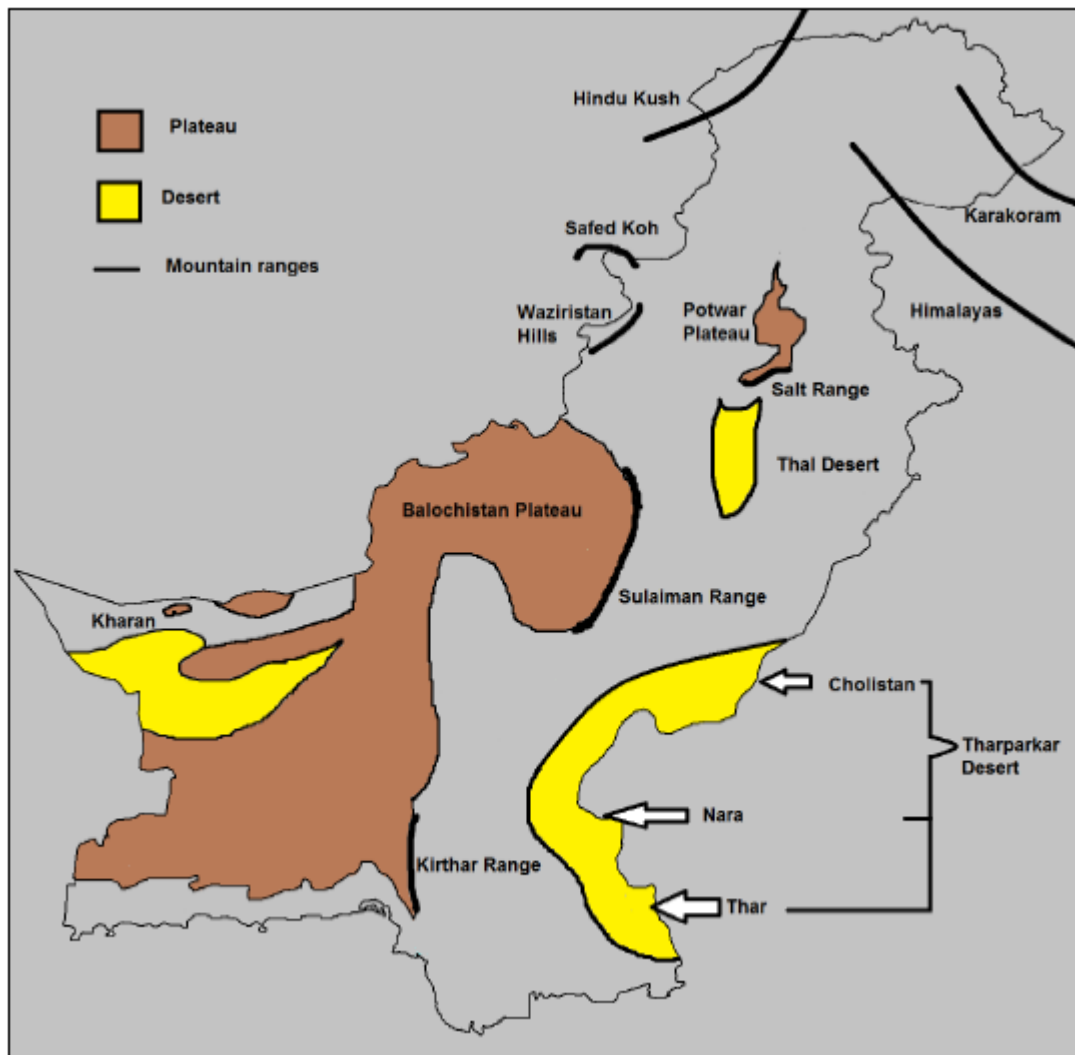


CITIES OF PAKISTAN





LANDFORMS AND DESERTS





RIVERS OF PAKISTAN





DEFINITIONS

Alluvial material: material brought by river.

Alluvial terrace or bar: central high area of doab which has mature type of soil (fine loamy). It is 10 to 15 meters high separated from old flood plain by a slope called scarp or bluff.

Alluvial fans: are found along foot of Kirthar Mountains in Sindh. During rainy season hill torrents (sudden flow of water) bring lot of silt, sand, gravel and rock material. At foot hill torrent slowdowns and deposit the material. Torrent split in many channels spread over 2 to 4 miles forms a sharp of Chinese fan called alluvial fans.

Alluvial cone: an alluvial fan with steep slope.

Basin: Natural or artificial depression in land like wash basin.

Braided channel: a stream with a wide, shallow channel split in two or more channels due to hurdle in the path. Split channels merge (join) again.

Boulder: any large, detached, generally rounded mass of rock.

Catchment area: the total area drained by a river and its tributaries.

Doab: The land between two adjacent rivers is known as doab or interfluves.

Drainage: The natural runoff (flow) of water from an area by streams and rivers.

Delta: is the mouth of the river. River is divided into number of distributaries (channels) before joining sea called delta.

Glacier: A large mass of snow over huge area formed by consolidation of snow falling.

Gradient: slope.

Gully: a narrow channel set up in earth by the action of water.

Gorge: a rocky walled, steep (sharp) sided deep narrow river valley.

Hamun: Shallow salt lake with inland drainage found in Balochistan Plateau.



Levees: are naturally built river bank by slow deposition of silt along sides.

Meander: curves in the natural course (path) of a river known as meander.

Mangrove swamp: trees grown in tidal mud in delta.

Oxbow lake: The small horse shoe shaped lake which is formed by the separation of a meander from its main stream is known as oxbow lake.

Plateau: is large stretch of highland which is practically at the same height above sea level. It descends on all sides to lower land.

Pass: a route over or through mountain.

Ravine: a small, narrow valley with steep sides, larger than a gulley.

Rugged: uneven, rough and irregular surface.

Relief: is the degree of unevenness or land form.

River bed: the channel in which river flow.

River basin: all area drained by river.

Runoff: all the water flowing from drained area. Flow of water.

Silt: fine particles larger than clay.

Shale: a fine grained sediment rock formed largely by hardening of clay.

Swamp: wet and spongy land saturated with water.

Terrain: an area of land in respect of its physical characteristics or conditions.

Tributary: a stream or river flowing into large river.

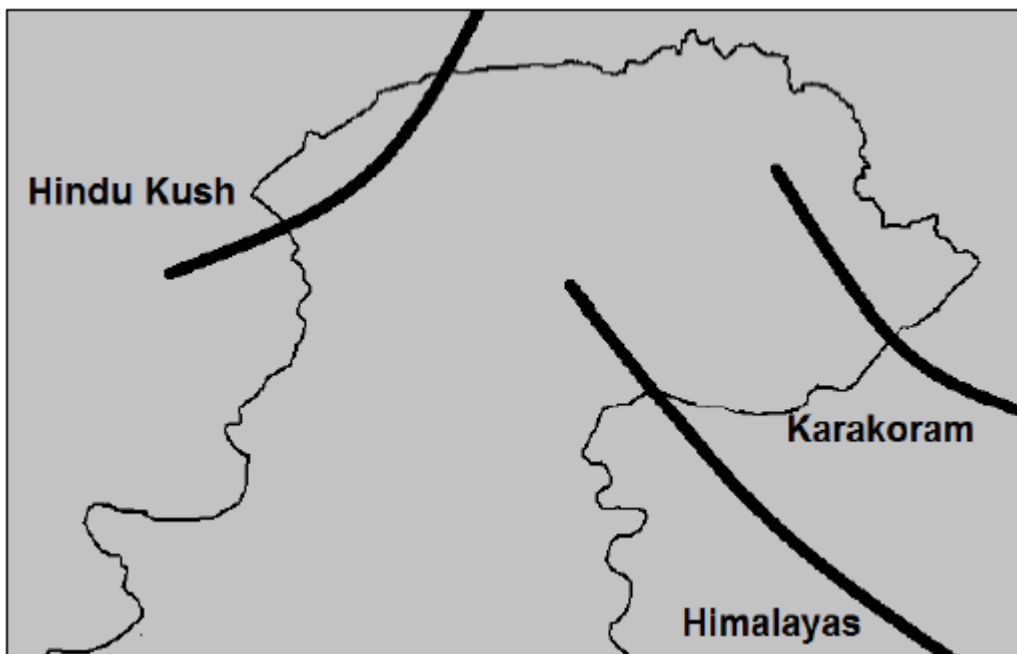
Tidal flat: an area of sand or mud uncovered at low tide.

Undulating: wavy form of land.



NORTHERN MOUNTAINS

- ✓ The Northern Mountains are divided into three main mountain ranges; the Karakoram, Himalayas and the Hindu Kush.
- ✓ The Karakoram runs from South East to North-West. They have an average height of 6000m.
- ✓ The Himalayas run from South-East to North-West and have an average height of 4000m.
- ✓ The Hindu Kush runs from North East to South West with an average height of 5000



Karakoram Range

- ✓ The Karakoram Range runs from 400 km from Hunza to Shyok River.
- ✓ The Karakoram Range is 200 km wide.
- ✓ The range runs in east-west direction.
- ✓ The average height of Karakoram Range is 6000 metres.
- ✓ K-2 (8610metres) is the highest peak of Karakoram Range.
- ✓ The range has deep, narrow valleys are sharp peaks covered with snow and glaciers.
- ✓ Siachen and Biafo are the main glaciers.



Himalayas Range

- ✓ Himalayas are in the south of Karakoram Range.
- ✓ They run East to West.
- ✓ The Himalayas is divided in Pakistan in three sub parallel ranges the great or high Himalayas, the lesser Himalayas and the sub-Himalayas.

The Great Himalayas

- ✓ The great Himalayas: also known as central Himalayas mostly lie in Kashmir.
- ✓ The average height of Himalayas is 6000 meters.
- ✓ Highest peak is Nanga Parbat (8126meters).
- ✓ Rupal is longest river.
- ✓ Satpara is largest lake of region.
- ✓ The river Indus River has set up a number of gorges (narrow valley) in its path.
- ✓ The peaks of central Himalayas are snow capped and steep-sided with large glaciers.

Lesser Himalayas

- ✓ The lesser Himalayas: are located south of the great Himalayas.
- ✓ Lesser of lower Himalayas are of medium height 1800 to 4500 meters.
- ✓ Lesser Himalayas are of special interest to tourist; Hill stations like Murree, Ghora Gali, Nathia Gali are located in lesser Himalayas.
- ✓ No glacier is found in this region.

Sub-Himalayas

- ✓ The sub-Himalayas or Siwaliks are the southernmost mountain of Himalayas located near Attock.
- ✓ They are low in altitude 600 metres to 1200 metres.
- ✓ They are located near Attock.

Hindu Kush

- ✓ The Hindu Kush range lies on north and north-west border of Pakistan.
- ✓ This range runs in north-south direction.
- ✓ Average altitude (height) of the Hindu kush range is 5000 metres.
- ✓ Trich Mir (7690m) is highest peak of range.



- ✓ High, steep (sharp), sided valleys with narrow floor are one of feature of Hindu kush range.
- ✓ Important passes of the range are Shandur pass connects which Gilgit and Chitral.
- ✓ Lawari pass connects chitral to swat and Peshawar Valley.
- ✓ Shangla pass connects Swat valley to upper Indus pass.
- ✓ The Hindu Kush range is bare (empty) of vegetation.
- ✓ Some forest lie in Swat, Chitral and Dir valleys are located in the range.

Life of People and Economy

- ✓ Northern Mountains have steep slopes, high peaks; deep gorges, rugged (rough) landscape, several steams and glaciers restrict (limits) human movement.
- ✓ Little land is available.
- ✓ Small scale agriculture is done on terraced (stepped) field.
- ✓ In summer livestock and tourism are source of income.
- ✓ Some hydro-electric projects are set up on rivers.
- ✓ Indoor activities like carpet making and embroidery (needlework) are carry out in winter because land is covered with snow.

Drainage Pattern

- ✓ River Indus and its tributaries is main feature of drainage pattern.
- ✓ River Indus starts from Mansrowar Lake in Karakoram.
- ✓ Indus River passes through Hindukush joined by river Kabul and Swat.
- ✓ After passing from dissected gorges enter in plain areas at Kalabagh.
- ✓ Tributaries (branches) of Indus such as Jhelum, Chenab, Sutlej and Beas starts from Himalayas passes through Kashmir and enter plain areas and join Indus at Mithankot.

Gilgit Agency Area

- ✓ Gilgit agency covers extreme northern part of Pakistan.
- ✓ It is a mountainous region covered by Karakoram Range.
- ✓ River Indus flows through it.
- ✓ In the south of river Indus located Himalayas range with average altitude (height) of 6000 metres.

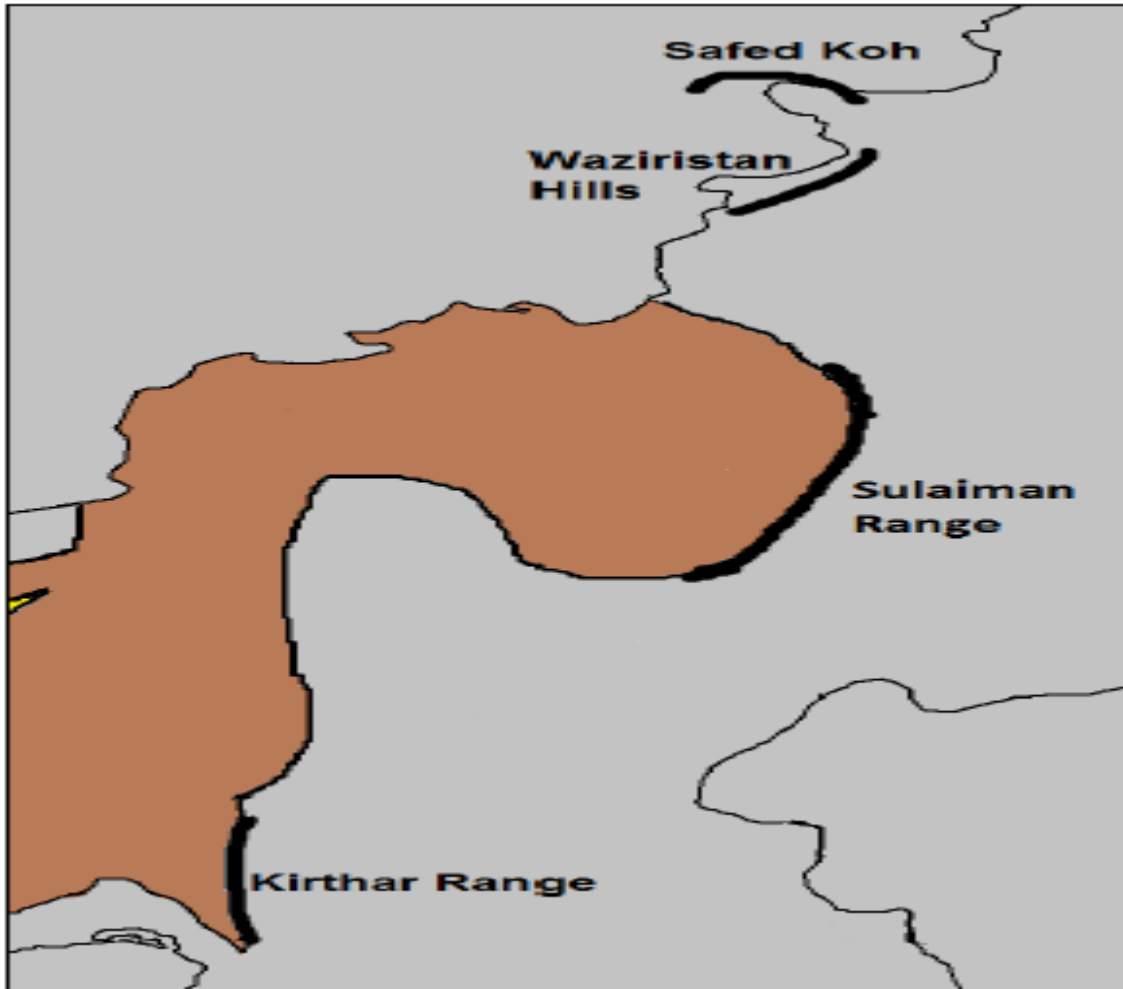


- ✓ High land comprises (made) of steep (sharp) sided parallel ranges, sharp sided ridges, peaks covered with snow, huge glaciers are located in Karakoram and Himalayas.
- ✓ River Gilgit and river Hunza flows from north and join Indus.
- ✓ Area is marked with cold winter and snow falls.



WESTERN MOUNTAINS

- ✓ This region consists of the mountain ranges, namely; the Waziristan hills, the Safed Koh range, the Sulaiman range and the Kirthar range



Waziristan Hills

- ✓ Waziristan hills are located between rivers Khurran and Gomul along Afghan border are highly mineralized.
- ✓ Hills have no vegetation.
- ✓ Hills rise up to 3513 metres.
- ✓ Bannu town is located in these hills.

Safed Koh

- ✓ Safed Koh range is located in the south of river Kabul in east-west direction.
- ✓ It has height up to of 4712 metres.

- ✓ Sikeram is the highest peak.
- ✓ It has snow capped lime stone ridges (peaks).
- ✓ It form barrier on Pak-Afghan border.

Sulaiman Range

- ✓ Sulaiman range: is located towards west of river Indus.
- ✓ Range is 400 km long and 20 to 25km wide.
- ✓ Highest peak is Takht-i-Sulaiman (3383metres).
- ✓ Lime stone and sand stone are the main minerals of area.
- ✓ Range separate Indus plain from Balochistan plateau.

Kirthar Range

- ✓ Kirthar range is located in the west of river Indus in Sindh and Balochistan plateau.
- ✓ Range rises up to 2174 meters and is bare of vegetation.
- ✓ Hub and Lyari are main rivers of Kirthar range.

Life of People and Economy

- ✓ Rugged (rocky) landscape is a hurdle in development of infrastructure and transport net work.
- ✓ Canal system cannot be set up due to mountainous landscape (land).
- ✓ Range is bare (empty) of vegetation can only support nomadic way of livestock.
- ✓ Mineral deposits are unexplored (unfound) due to poor road network.
- ✓ Only valleys like Peshawar, Kohat and Bannu are very much populated.

Drainage Pattern

- ✓ The Safed Koh range is drained by River Kabul, which runs in an West to East direction and eventually joins River Indus
- ✓ The Waziristan hills are drained by small seasonal rivers like Kurram, Tochi and Gomal.
- ✓ These rivers run from West to East, and all are the Western tributaries of the River Indus
- ✓ The Sulaiman range is drained by small hill torrents and small seasonal rivers such as the Bolan and Mula. These rivers usually lead to small inland lakes, where the water collects and then dries up (for example the lake Damas)

- ✓ The rain falling on Eastern slopes of Sulaiman range runs down the slopes and falls into piedmont plains leading to the formation of alluvial fans



BALUCHISTAN PLATEAU

Topography

- ✓ Balochistan Plateau has a height varying from around 600m to around 3000m
- ✓ It has deep narrow valleys like Quetta
- ✓ They have bare rocks due to lack of rainfall
- ✓ The mountains have steep slopes and none are snow capped.
- ✓ There are parallel ranges running in an East to West direction for example the Chagai Hills, Raskoh Range, and Makran Coastal Range are all parallel ranges
- ✓ Parallel ranges running North-South direction are Central Brahui and the Hala range

Drainage

- ✓ In the Southern part of the Balochistan Plateau, the River Dasht and River Porali flow from north to South, thus eventually draining into the Arabian Sea. Both are seasonal rivers; they flow only during the rainy season.
- ✓ In Central Balochistan, water either drains into inland lakes known as Hamuns or is absorbed into the ground, if not, it evaporates. Dry lakes known as Hamun exist (like Hamun-i-Mashkel). They are formed when seasonal rivers flow into them during the rainy season. A Hamun is a sort of depression on the Earth's surface.
- ✓ In Northern Balochistan, River Zhob flows from southwest towards northeast. It eventually meets the River Gomul, which is a western tributary of the River Indus.



POTWAR PLATEAU

Topography

- ✓ Height ranges from 305 to 610m and represents a region of badland topography.
- ✓ The hills have steep slopes and are badly dissected, faulted and folded.
- ✓ Many residual hills are present, a feature left by the last Ice Age due to retreating glaciers.
- ✓ Ravines (shallow, steep sided narrow valleys) are present between ridges (elevated pieces of land that run for some distance). Ravines are formed due to the erosion of soft rock by flowing water over a long period of time
- ✓ Furrows (shallow long running ditches) are formed by the flow of rainwater. Overtime the land becomes deeply dissected as the substantial flow rainwater (during heavy downpour) enlarges the furrows into gullies (deep long running ditches)

Drainage

- ✓ River Soan drains much of Potwar Plateau.
- ✓ It runs from North-East to South-West and eventually drains into the River Indus.
- ✓ Other small rivers are also present but **all** are active in the rainy season.
- ✓ These rivers have meanders (curves in the path of a river) because they have to flow around small hills
- ✓ Alluvial plains have also formed along the rivers due to seasonal flooding and the consequent deposition of silt by the river

Salt Range

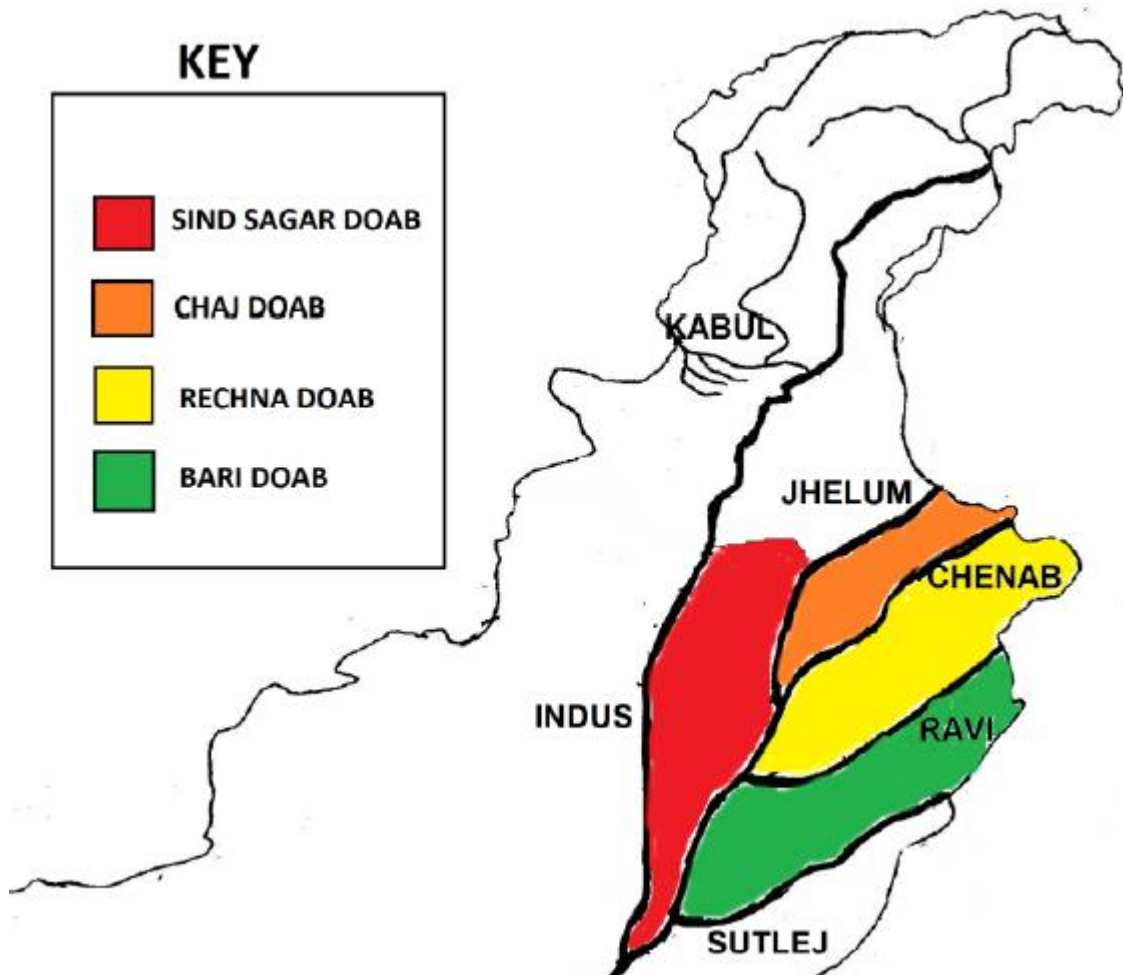
- ✓ Average height of salt range is 750 meters to 900 meters.
- ✓ The Skesar peak is 1527 meters high.
- ✓ Range runs in east-west direction.
- ✓ Range covers most of Jhelum, Chakwal, Kalabagh and Mianwali districts.
- ✓ South slope of range is steep and other is gentle.
- ✓ Salt range is collection of several parallel ranges which are folded and faulted.
- ✓ Sand stone and shale rocks are commonly found.
- ✓ Salt range is also rich in rock salt, gypsum and lime stone.



INDUS PLAIN

Doab

- ✓ The land between two rivers.



Active Flood Plain

- ✓ It is a flat plain on both sides of a river, which suffers annual floods during the rainy season.
- ✓ It is around 2-3m above the level of a river.
- ✓ It is around 10-20km long. The river always changes its position, thus meanders have come into existence.
- ✓ Abandoned (dry) and braided channels are also visible in the dry season.
- ✓ Meanders, oxbow lakes and embankments of a river can be seen as well.
- ✓ Soils of loam and silt (Alluvial Soils), which are good for farming, are present in both the UIP and LIP.

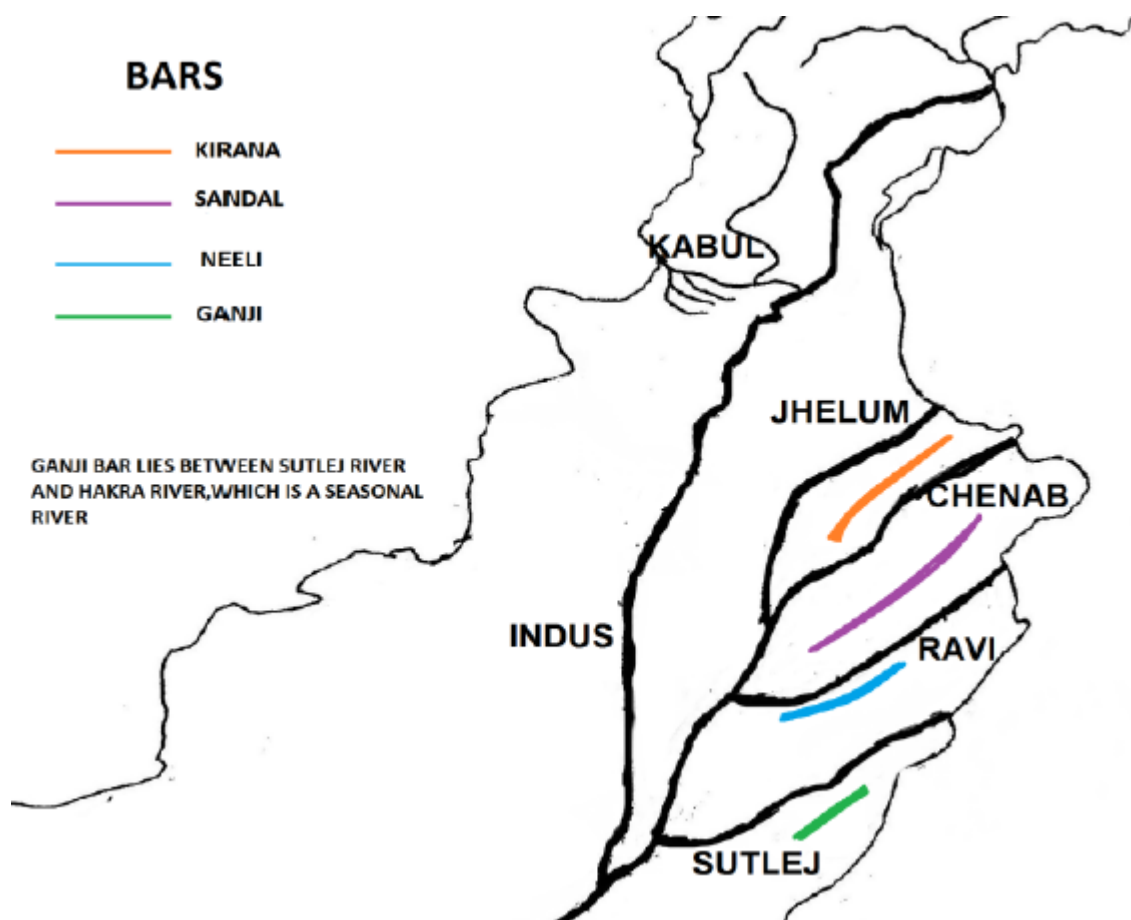


Old Flood Plain

- ✓ It is higher than active flood plain around 5m higher than river level.
- ✓ It is around 10-20m long.
- ✓ It is made up of old alluvium.
- ✓ Evidence of meanders and of levees is present in these plains.
- ✓ Oxbow lake depressions can also be seen.
- ✓ The old flood plains are present in both UIP and LIP.

Bars (alluvial Terraces)

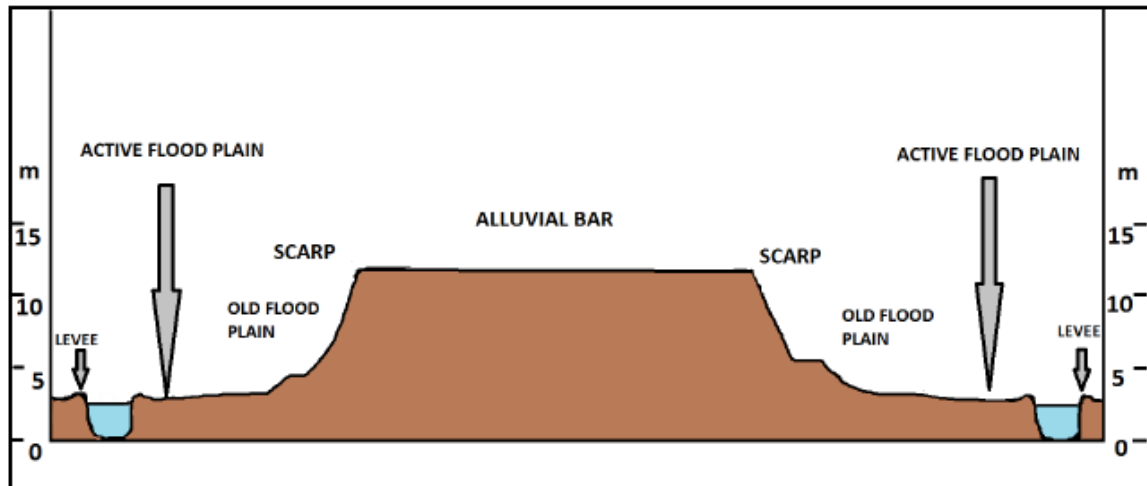
- ✓ These are flat areas which are **only** found in the Upper Indus plain.
- ✓ They are 7–12m high and last for 25-35km.
- ✓ They are made up of areas of silt and clay.
- ✓ In Pakistan all the bars have a south west direction.
- ✓ It is highest place on doab safe from floods.





Scarp

- ✓ Scarp is a slope which separates the old flood plain from the bar upland.
- ✓ It is around 20m long and 11m high above the river level.
- ✓ It is made when old alluvium on the bar upland is eroded, thus, leaving a slope which connects both old flood plain and the bar upland



Upper Indus Plain

- ✓ In the upper Indus plain there are doabs (a doab is a land between two rivers) e.g. Bari Doab. Bars (alluvial terraces) are also present, which are 7-12m high e.g. the Nilli and Ganji Bars.
- ✓ The rivers keep on changing their course slightly (meanders). There are levees along the river bed, which help contain the river.
- ✓ Active flood plains are present alongside the river; these are low lying areas of flat land, which are annually flooded in the rainy season. The active flood plain is made up of new alluvium
- ✓ The old flood plains are also present. They are flat areas, which are higher than active flood plains. They are made up of old alluvium, which had been deposited a decade ago. They're flooded after a decade or so, when strong monsoon winds combine with the heavy melting of snow and ice in the glaciers of the Northern Mountains.
- ✓ Piedmont plains are found at the foothills of the Himalayas in the Salt Range. They are formed by the deposition of material by hill torrents, when they lose their speed. Kirak Hills exist between the River Chenab and Jhelum

Lower Indus Plain

- ✓ The Lower Indus Plain principally differs from the Upper Indus Plain due to presence of a tidal delta (the Indus Delta) and also because in the Lower Indus Plain only one river that is, the river Indus, flows.



- ✓ Indus delta exists in some of the southern parts of the Lower Indus Plain. A delta is a low lying triangular area which has alluvial deposits. Here the river divides into distributaries before entering a larger body of water (in this case the Arabian Sea). The delta exists because of the deposition of material carried by the river. This happens because when the river enters into the sea, it loses its speed and thus also loses its ability to hold this material, which is therefore deposited at the mouth of the river.
- ✓ In the lower Indus Plain, we may find limestone ridges which are known as *cuestas*, a few examples being; Rohri and Gango Takar *Cusetas*.
- ✓ Oxbow lakes are also present in the lower Indus plain. Active and Old Flood Plains are also present, but a *doab* and alluvial terraces are absent. Meanders however are present too.
- ✓ Piedmont Plains are present at the foothills of Kirthar and Sulaiman Mountain ranges. Part of the Indus plain that extends into Balochistan is known as the Kachi Sibi Plain.
- ✓ Both these plains have rolling sand dunes (Thal and Thar deserts), flat plain areas, have some low lying hills, oxbow lakes and meanders etc.
- ✓ The main differences are the number of tributaries and distributaries (delta) in both the plains, how much water each of the plain contributes to the Indus River system (The Upper Indus Plain contributes more towards the volume of water in the form of rain etc). The Upper Indus Plain is also a bit higher than the low lying Lower Indus Plain. Considering the altitude of these two plains, we see that it decreases from North towards the South generally.

Drainage of Indus Plain

- ✓ The Lower Indus plain is drained by the River Indus mainly flowing in the North-South direction. Meanders and oxbow lakes also exist. Piedmont plains exist in-between the river Indus and Sulaiman and Kirthar Mountain ranges.
- ✓ In the Upper Indus plain, River Indus and its Eastern tributaries flow in North- South direction. Tributaries are Jhelum, Chenab, Ravi and Sutlej. Meanders and oxbow lakes also exist.



DESERTS

- ✓ A desert is a place that receives very low amount of precipitation (less than 250mm).
- ✓ It is an area that can support almost no vegetation.
- ✓ Deserts can be cold as well as hot (have a high rate of evapotranspiration).
- ✓ Pakistan has 3 main deserts; the Thal, Tharparkar and the Kharan desert, all of which are hot deserts
- ✓ Thal is found in Punjab between Jhelum and Indus Rivers.
- ✓ Tharparkar is divided into 3 parts; Cholistan is found in Southern Punjab, Nara in Eastern Sindh and Thar in the South East of Sindh.
- ✓ Kharan is found in Western Balochistan.

Topography

- ✓ There are strips of soil found between sand dunes along with the sandy plains.
- ✓ Sand dunes shift grain by grain due to the pattern of the blowing wind.
- ✓ Sand dunes sometimes reach a height of 150m, and are both longitudinal and latitudinal in direction.
- ✓ All of the sand dunes are crescent shaped.
- ✓ When the wind blows away the top cover of sand away, bare and weathered rocks are exposed onto the surface



WEATHER

- ✓ Weather refers, generally, to day-to-day temperature and precipitation activity.

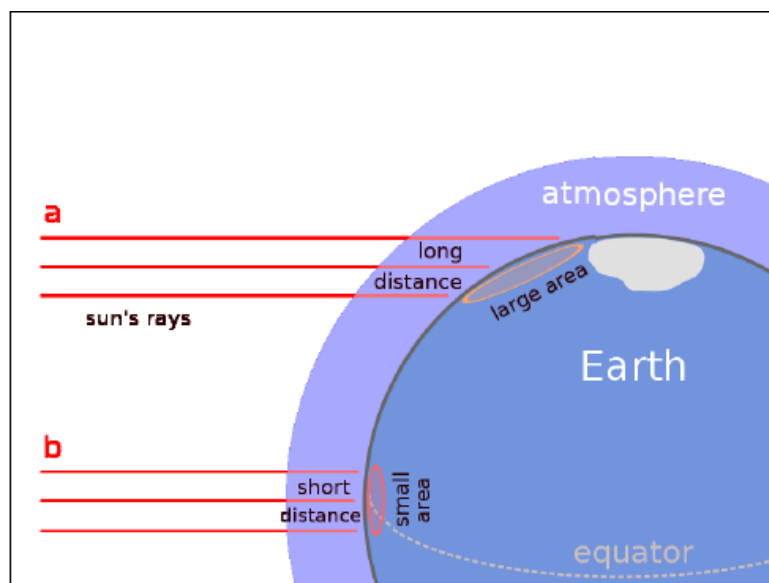
CLIMATE

- ✓ Climate is the term for the average atmospheric conditions over longer periods of time (30 years etc)

FACTORS AFFECTING TEMPERATURE

Angle of Sun

- ✓ Temperature is dependent either directly or indirectly on the influence of the sun.
- ✓ As it is evident the Polar Regions or regions far away from the Equator are generally cooler than the ones nearer the Equator. This is because for solar radiation to reach the poles and heat them it has to travel a larger distance in space, thus it loses its intensity (energy).
- ✓ Also near the poles the radiation arrives at an oblique angle so solar energy spreads over a large area. Since Pakistan lies in subtropical areas it does receive most of intense solar radiation concentrated on a small area thus the temperature in general is warmer. So in general terms Faisalabad will be cooler than say Hyderabad





Influence of large water bodies

- ✓ Water has a high specific heat capacity as compared to land, meaning that water has to absorb more heat to have an increase in temperature as compared to land.
- ✓ Thus land gets hotter quickly than sea etc.
- ✓ Since the land gets hot quickly, the air over it also absorbs heat and gets less dense.
- ✓ This hot air rises and creates a low pressure.
- ✓ The sea on the other hand absorbs less heat and moist air over it gets less hot.
- ✓ Thus it is denser as compared to the air over land and doesn't rise as much as the air over land does, which results in the persistence of high pressure over the sea.
- ✓ Winds travel from high pressure area to low pressure area, thus in this case wind blows from sea towards land.
- ✓ This is known as a sea breeze, which is cool and moist
- ✓ On the contrary at night when there is no solar radiation, the land loses heat quickly and air over it gets cooler and denser.
- ✓ The sea retains its heat and air over it is generally hotter and less dense.
- ✓ So a land breeze occurs when wind blows from land to sea
- ✓ During the summers, the land is much hotter than the Arabian Sea, thus convection currents of air are setup. Cool air from sea flows inland thus regulating the temperature and making summers a bit cooler than it would have been without the influence of the sea
- ✓ In winters, the sea retains its warmth and thus cold air from coastal areas flows towards sea. To replace the air in coastal areas whose rising has created a low pressure, dry warm air from interior Sindh and Punjab flows towards the coast, thus making winters less cold than they would have been without the influence of the sea
- ✓ If an area doesn't experience moderating effect of sea then it has a continental climate, which is characterized by hot summers and cold winters. USUALLY THOUGH NOT ALL THE TIMES, most of the rainfall in these continental climate areas occurs in the winters



Altitudes

- ✓ Altitude also has a big impact on the average temperatures experienced by an area.
- ✓ The solar radiation is a short-wavelength radiation, which does not heat the atmosphere directly when it passes through it.
- ✓ This is because it is poorly absorbed by the air particles (gases and water vapours).
- ✓ Instead the atmosphere is heated from the bottom by long-wave radiation from the earth's surface.
- ✓ The Earth's surface reflects the short wavelength radiation as long wavelength radiation.
- ✓ This long wave radiation is better absorbed by gas molecules and water vapours as compared to the short wavelength radiation.
- ✓ The temperature of the atmosphere decreases with increase in altitude, as short wavelength has to pass its heat to a lot of air particles to transfer heat to the high altitude areas.
- ✓ Also as the altitude increases the amount of atmosphere decreases (air gets thinner and thinner), thus there are less gas molecules and water vapours present to absorb the long wavelength radiation.
- ✓ Thus overall a smaller proportion of the total heat energy is passed on to the higher parts of the atmosphere
- ✓ On average dry air loses around 9.8 °C per every Km rise in height, meanwhile moist air loses around 10 °C for every Km rise in height

Valley

- ✓ Most of the sun's rays are blocked from reaching the lower parts of valleys due to the presence of mountains, which surround the valley.
- ✓ This lowers the average temperatures of these valleys, as less solar radiation reaches the surface of the valley to be reflected and then absorbed.

Cloud Cover

- ✓ Temperatures decrease when clouds appear and block out the Sun's rays, which are then reflected back into space.



- ✓ However cloud formation only takes place when air contains sufficient moisture and has been sufficiently cooled.
- ✓ Thus cloudy days are much cooler than sunny days during the same months.
- ✓ However cloudy nights are hotter than cloudless nights because the clouds trap heat inside the Earth's surface. This heat is easily radiated back to space when no clouds exist but when they do exist this heat is reflected back onto the Earth's surface.
- ✓ These two reasons help us explain why a day in desert is very hot 50°C but night is cool/cold 5°C

MONSOON RAINFALL

- ✓ Monsoons are seasonal winds that blow from sea towards land from July to August (summers).
- ✓ After it they reverse their direction and blow from land towards the sea (winters).
- ✓ During the summers due to the high angle of sun, Punjab and Sindh plains get heated up, thus an area of very low pressure develops here as the hot air rises.
- ✓ There are two monsoon systems, one originating from the Bay of Bengal and other from the Arabian Sea.
- ✓ During summer low air pressure is developed over Pakistan.
- ✓ While high air pressure prevails over sea (Bay of Bengal, Indian Ocean and Arabian Sea) so moist (humid/wet) wind from Indian Ocean and Arabian Sea blow towards land to fulfill the low air pressure.
- ✓ Wind from Indian Ocean reaches Pakistan after crossing India called primary monsoon.
- ✓ Monsoon winds from Arabian Sea are called secondary Monsoon which causes less rain.
- ✓ These winds cause rain from July to September.
- ✓ The amount of rain decreases from northern area to Southern areas.
- ✓ Monsoon of Bay of Bengal affect northern Punjab, Khyber-Pakhtunkhwa, Gilgit-Baltistan and Azad Kashmir
- ✓ On the other hand another monsoon system that originates in Arabian Sea also travels inland but doesn't bring significant rainfall to areas of Sindh because of a temperature inversion layer



WESTERN DEPRESSION

- ✓ These are wind systems that originate from the Mediterranean Sea and travel eastwards towards Afghanistan and Pakistan.
- ✓ Since they make a long journey they lose most of their water when they reach Pakistan.
- ✓ During the winters (Late November to March) they bring rainfall because during winters the Arabian Sea retains its warmth and thus cold air from coastal areas flows towards sea.
- ✓ The flow of air from coastal areas creates a low pressure, thus dry colder air from interior Sindh and Punjab flows towards the coast.
- ✓ To replace the low pressure formed in Punjab and Sindh plains, these western depressions move from high pressure area (Mediterranean Sea) towards the low pressure area (Indus Plains)

CONVECTIONAL RAINFALL

- ✓ Convection rainfall occurs when the sun heats up the land.
- ✓ The air near the land absorbs heat by conduction, and thus gets less dense and rises.
- ✓ The moisture in air condenses to form clouds, and when this air is cooled to a certain minimum level rainfall occurs

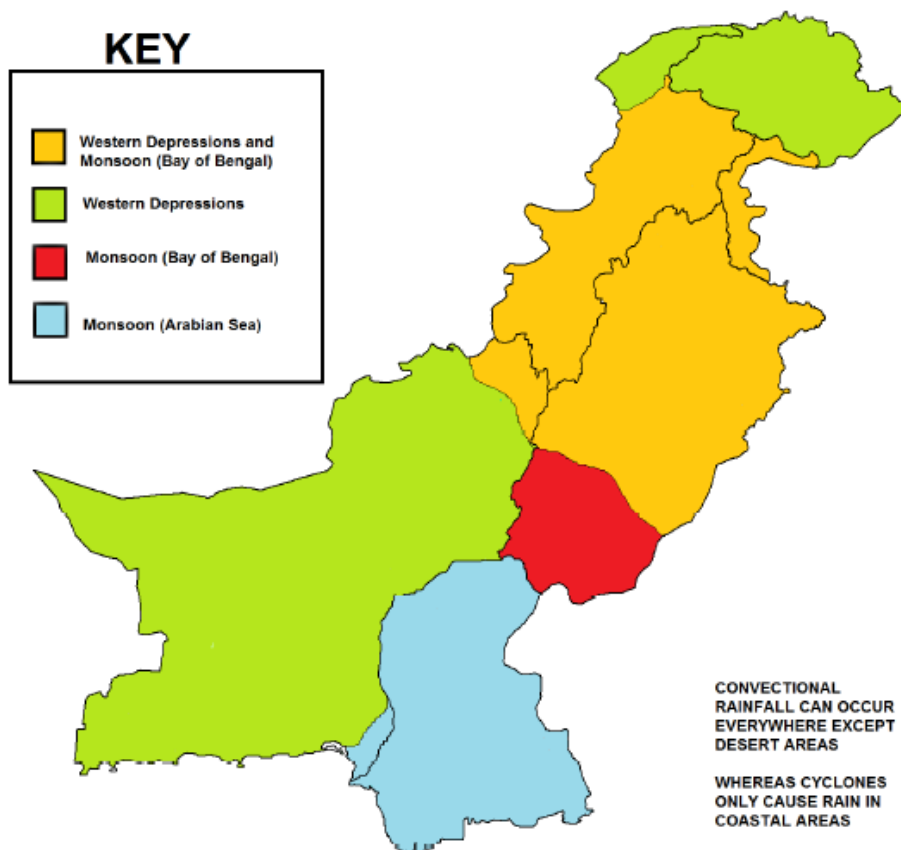
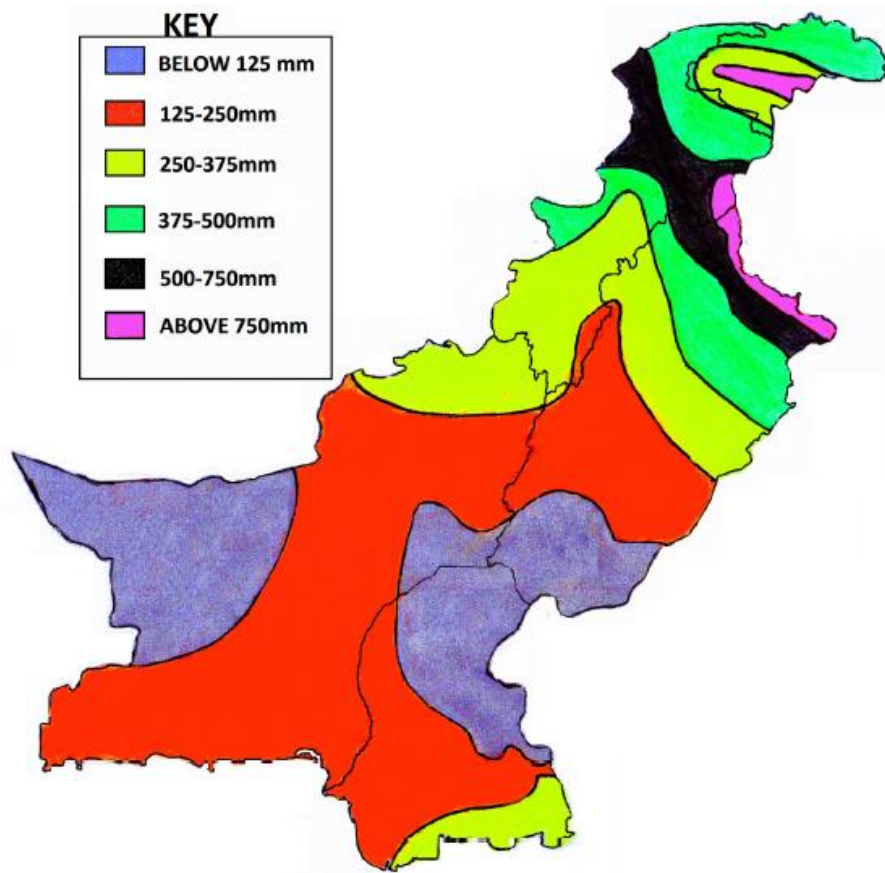
THUNDERSTORM

- ✓ Thunderstorms occur in the same fashion as convectional rainfall with the main difference being that the air here rises very quickly forming Cumulonimbus clouds, which are very tall and big.
- ✓ This is followed by strong winds, lightning and heavy rainfall.
- ✓ Hailstones may also be formed, when the water vapours are cooled multiple times (to form water first and then ice).

CYCLONE

- ✓ Cyclones are formed when the average temperature of large water body exceeds 27°C , thus forming an area of very low pressure.
- ✓ This area then draws further air from high pressure areas quickly.
- ✓ A cone is formed when two oppositely travelling cold and warm winds meet.

- ✓ Intense lightning followed by very strong winds and heavy rainfall occurs.





FLOODS

- ✓ Flood is a temporary covering of land by water which is not usually under water.
- ✓ They can be caused by variety of factors like Heavy monsoon rainfall accompanied with melting of snow and ice in glaciers, dam or barrage failure, unusually high tides in coastal areas and by a tsunami
- ✓ However their effects can be exacerbated by factors like deforestation, failure to heighten or strengthen embankments, poor medical and communication facilities in aftermath of disaster and inadequate warning systems to allow people time for escape.
- ✓ Benefits of floods are limited to restoring underground water supplies, filling reservoirs of dam and laying down a fresh layer of silt on the inundated soil; which makes the soil fertile

Effects

- ✓ Casualties - People and livestock die due to drowning. It can also lead to epidemics and waterborne diseases.
- ✓ Suspension of Trade- Airports can be closed (businessmen can be affected), roads and railway lines severed causing disruption to supplies of raw materials and products etc
- ✓ Water supplies can be contaminated.
- ✓ Spread of water-borne diseases. This could pose a serious danger to health of people who are affected
- ✓ Crops can be washed away, thus leading to food shortages.
- ✓ There could be a shortage of supplies to agro-based industries, like shortage of raw cotton to cotton factories. These factories thus won't be able to fulfil their orders and will lose customers. To reduce their operating costs they will lay off workers causing unemployment and their own profits will decrease
- ✓ Silt deposited by floods adds nutrients to the flooded soil
- ✓ Trees die as their submerged roots can't absorb oxygen
- ✓ There could be a decline in tourism, rebuilding costs could soar etc

Solution

- ✓ Dams could be built to contain and regulate the flow of water and prevent flash floods
- ✓ Advanced warning systems should be installed in flood prone areas to warn people to get out before it's too late



- ✓ Medical and transport facilities be regularly updated and checked
- ✓ Embankments and levees should be heightened and strengthened
- ✓ Also afforestation and re-afforestation projects should be carried out in Northern Mountains to reduce run-off and thus reducing chances of flash floods
- ✓ Mangrove plantations should be protected and allowed to grow, which protect from damaging rise in tide level during a tsunami

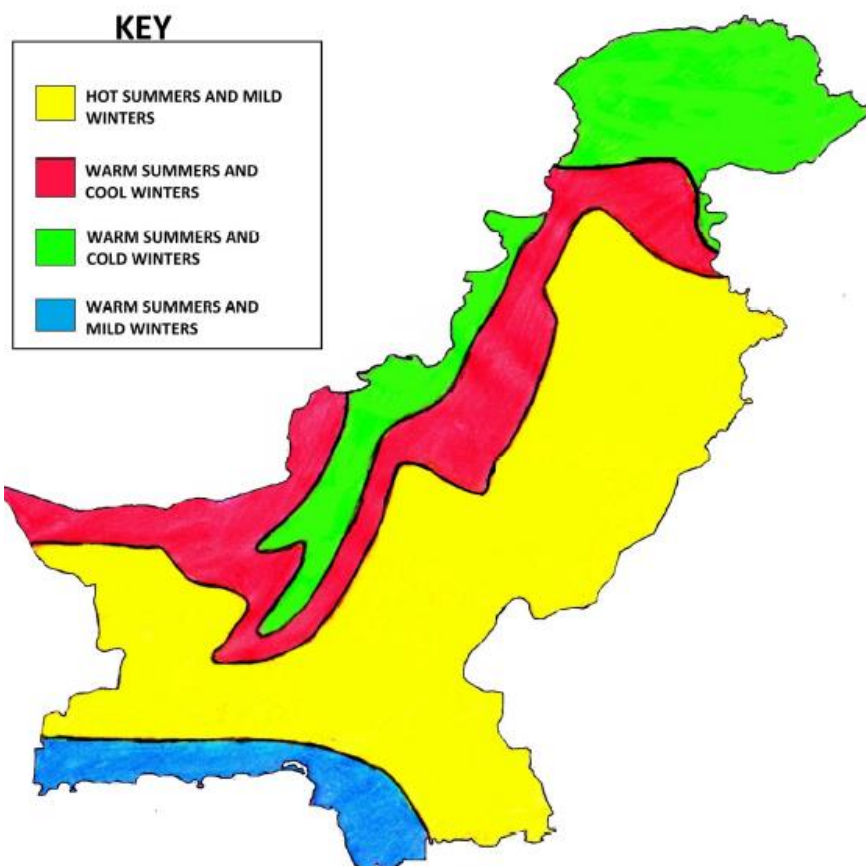
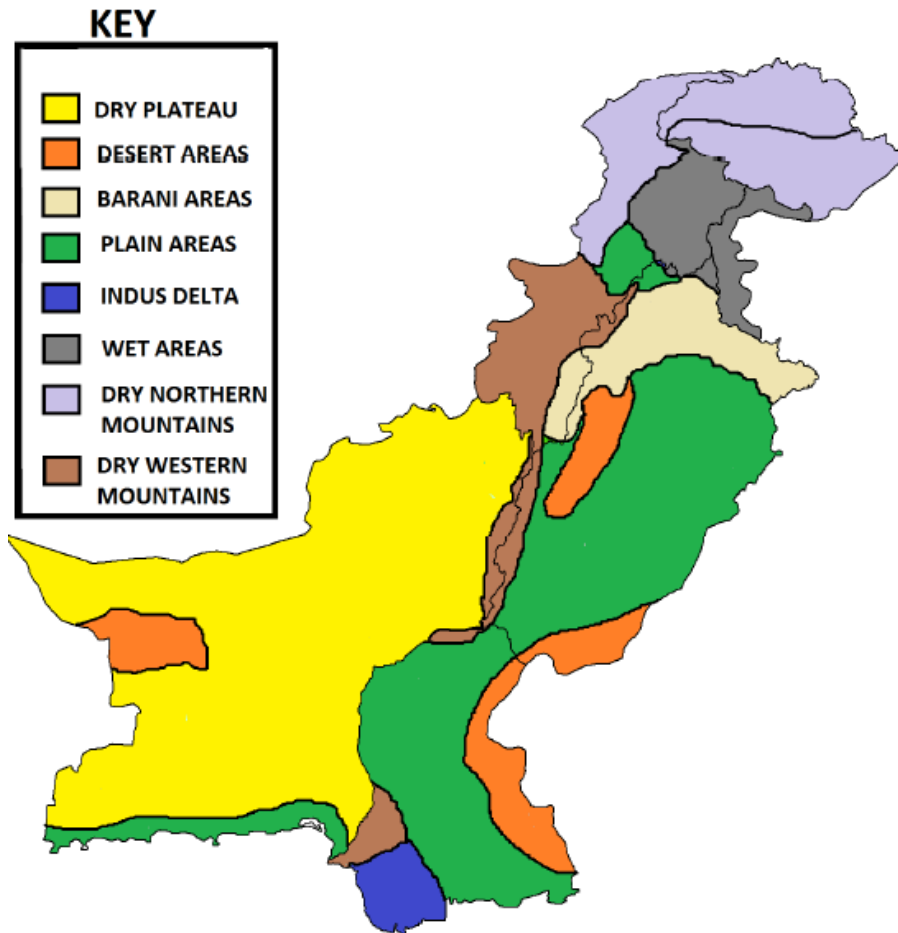


DROUGHTS

- ✓ A drought is a period extending over several months or years when a region suffers a deficiency in its water supply.
- ✓ This occurs when a region receives below than average precipitation over a period of time.
- ✓ Meteorological drought is brought about when there is a prolonged period with less than average precipitation.
- ✓ Agricultural droughts are droughts that affect crop production. This condition can also arise independently from any change in precipitation levels when soil conditions and erosion triggered by poorly planned agricultural endeavours. These cause a shortfall in water available to the crops.
- ✓ Hydrological drought is brought about when the water reserves available in sources such as aquifers, lakes and reservoirs fall below the statistical average.

Effects

- ✓ Crop yields can be dramatically reduced and livestock production could fall (milk, eat etc). This can raise prices of goods and affect price of exported goods making them uncompetitive in international markets thus harming national interests
- ✓ Dust storms can occur, when drought hits an area suffering from desertification and erosion. This can lead to siltation in reservoirs of dam, hampering electricity generation and weakening dam's foundation
- ✓ Habitat damage, affecting both terrestrial and aquatic wildlife
- ✓ Malnutrition, dehydration and related diseases could affect millions
- ✓ Mass migration causing the increase in internal refugees or international refugees
- ✓ Reduced electricity production could occur as reduced water flow through hydroelectric dams leads to low industrial production and less exports resulting in less foreign exchange
- ✓ Shortages of water for industries like (juice etc), which affects employment and GDP
- ✓ Social unrest may follow leading to instability, which can discourage foreign investment thus local sectors may suffer from outdated machinery techniques etc resulting in low production
- ✓ War could occur over natural resources, including lakes and fertile areas etc
- ✓ Wildfires can become common and can cause health hazard to people



SUMMERS PAST PAPERS 2019-2011

Question 1

J2019/P2/Q1

(a) Study Fig. 1.1, an outline map of Pakistan.

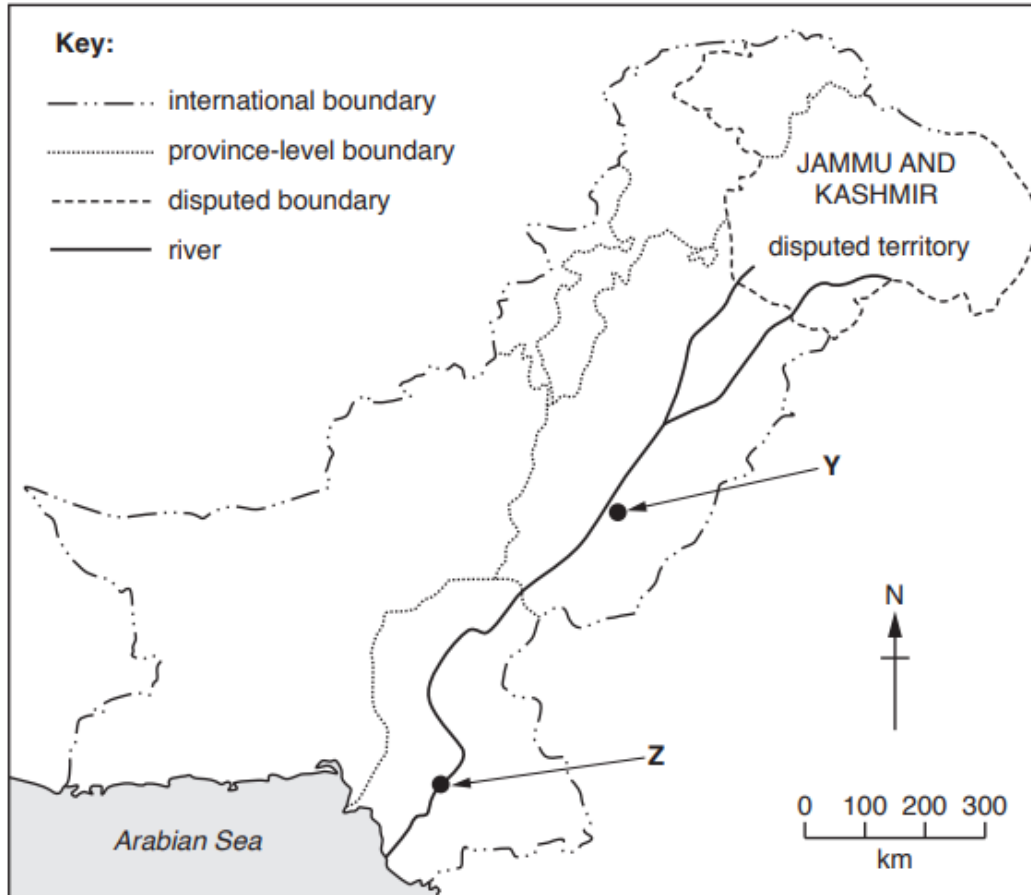


Fig. 1.1

(i) Label on Fig. 1.1 the province-level areas in the correct locations using the letters from the list below.

letter	province-level area
A	Balochistan
B	FATA
C	Northern Areas/Gilgit-Baltistan
D	Kyber Pakhtunkhwa (KPK)
E	Punjab
F	Sindh

[3]

(ii) Name the cities Y and Z.

Y



Z

[2]

(b) (i) Describe the characteristics of a floodplain.

.....

.....

.....

.....

.....

.....

[3]

(ii) State **two** ways that land on a floodplain is used.

1

2

[2]

(c) (i) **Complete** the passage below about monsoon rainfall in Pakistan. Choose the correct words from the list and place them in the spaces provided.

Monsoon blow towards the heart of the in
..... . They blow towards the sea in

autumn

continent

ocean

spring

summer

winds

winter

[2]

(ii) Describe the causes of the south west monsoon.

.....

.....

.....

.....

.....

.....

[3]

(iii) Explain **two** impacts of a heavy monsoon. You should develop your answer.

[4]

(d) Rivers are an important resource for human settlement and economic activity, but flooding is an increasing problem which can hinder development. Read the following two views about ways to manage flooding in Pakistan:

A

More flood management schemes are needed along rivers to prevent floods.

B

Flooding brings
benefits so rivers
should be allowed to
flood naturally.

Which view do you agree with more? Give reasons to support your answer and refer to examples you have studied. You should consider View A and View B in your answer.

This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

..... [6]

[6]

Question 2

J2018/P2/Q1

(a) Study Fig. 1.1, a map of Pakistan.

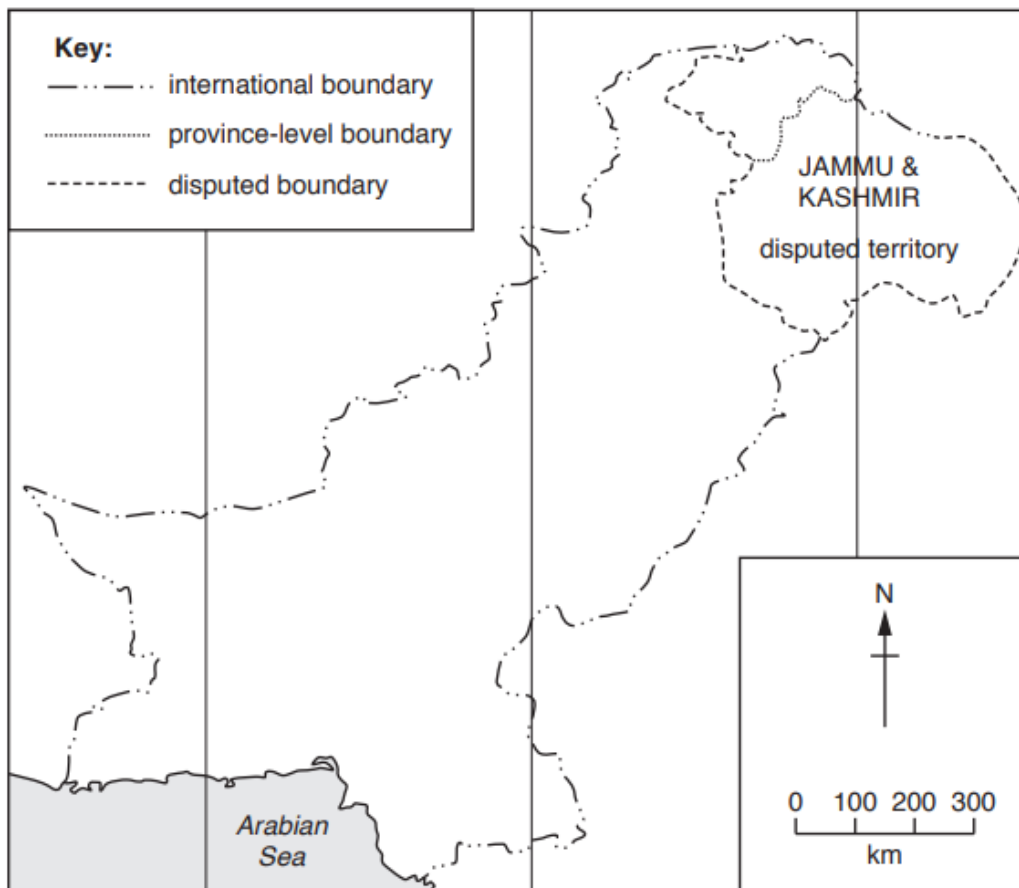


Fig. 1.1

- (i) On Fig. 1.1, **label** the following: Afghanistan; India; Line of longitude 70°E

You should write the name in the correct location on the map. [3]

- (ii) On Fig. 1.1, **draw** and **label** the Tropic of Cancer. [2]

- (iii) Describe Pakistan's location in relation to other countries in South and Central Asia.

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.....[3]

- (b) (i) Study Fig. 1.2 (Insert). Describe the main features of the desert area shown in the photograph.





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.....[3]

- (ii) Explain the challenges of living in a desert area, such as that shown in Fig. 1.2. You should develop your answer.

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.....[4]

- (iii) Study Fig. 1.3 (Insert). State **two** features of the climate typical of the environment shown in the photograph.



1

2[2]

- (c) Suggest **two** ways in which latitude affects the climate of Pakistan.

.....[2]

- (d) Evaluate the extent to which the natural topography of Pakistan limits human activity and economic development in the north of the country. Give reasons to support your **judgement** and refer to examples you have studied. You should consider **different** points of view in your answer.

=====

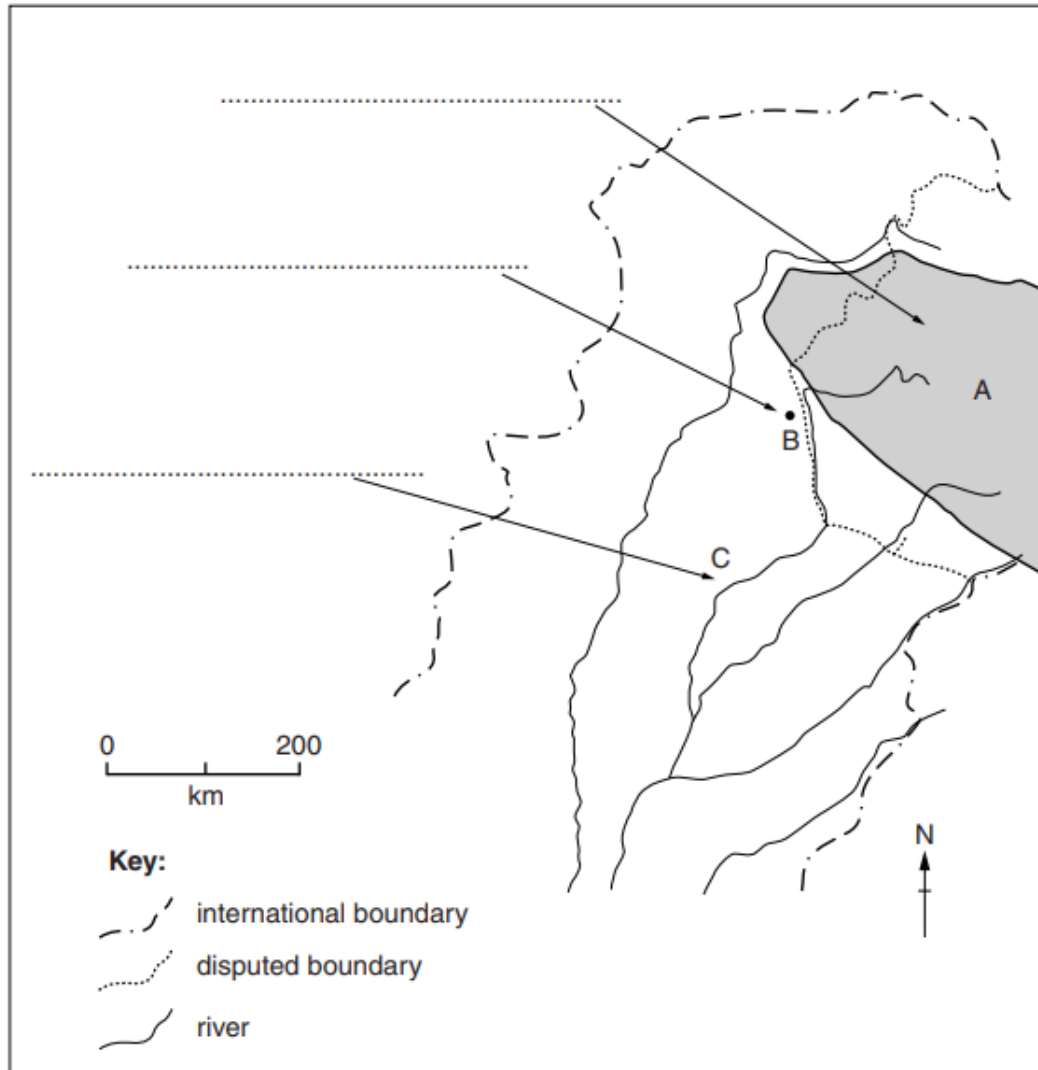
.....[6]



Question 3

J2016/P2/Q1/A

(a) Study Fig. 1 which is a map of northern Pakistan.



(i) On the map name the following:

- Mountain range A
- City B
- River C

[3]

(ii) Explain the causes of high rainfall at city B.

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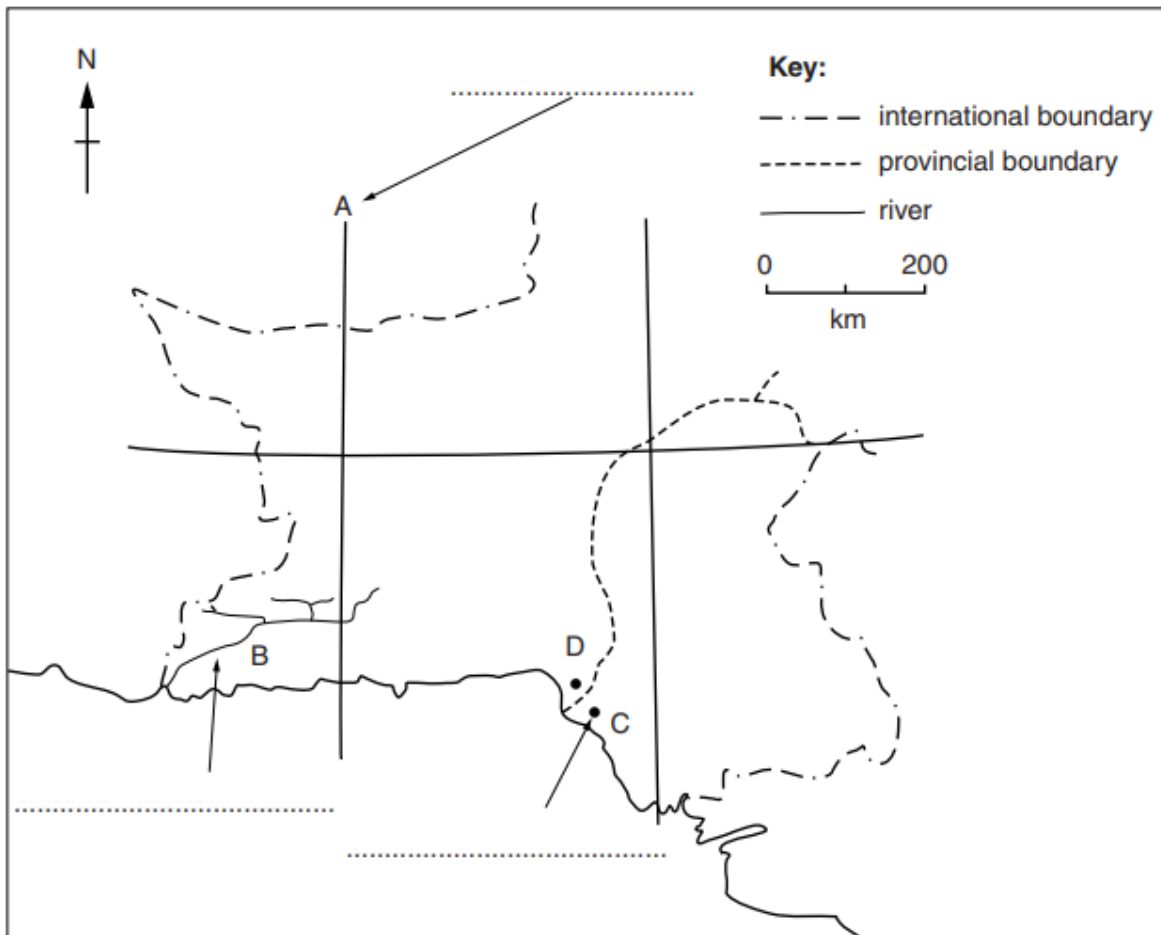
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[4]

Question 4**J2016/P2/Q5/A(i)****(a)** Study Fig. 9 which is a map of southern Pakistan.**Fig. 9****(i)** On the map name the following:

- Line of longitude A
- River B
- City C

[3]

Question 5

J2015/P2/Q1/A-B

- (a) (i) On the outline map of Pakistan Fig. 1 mark and shade **two** areas which experience low annual rainfall (125 mm or less). [2]

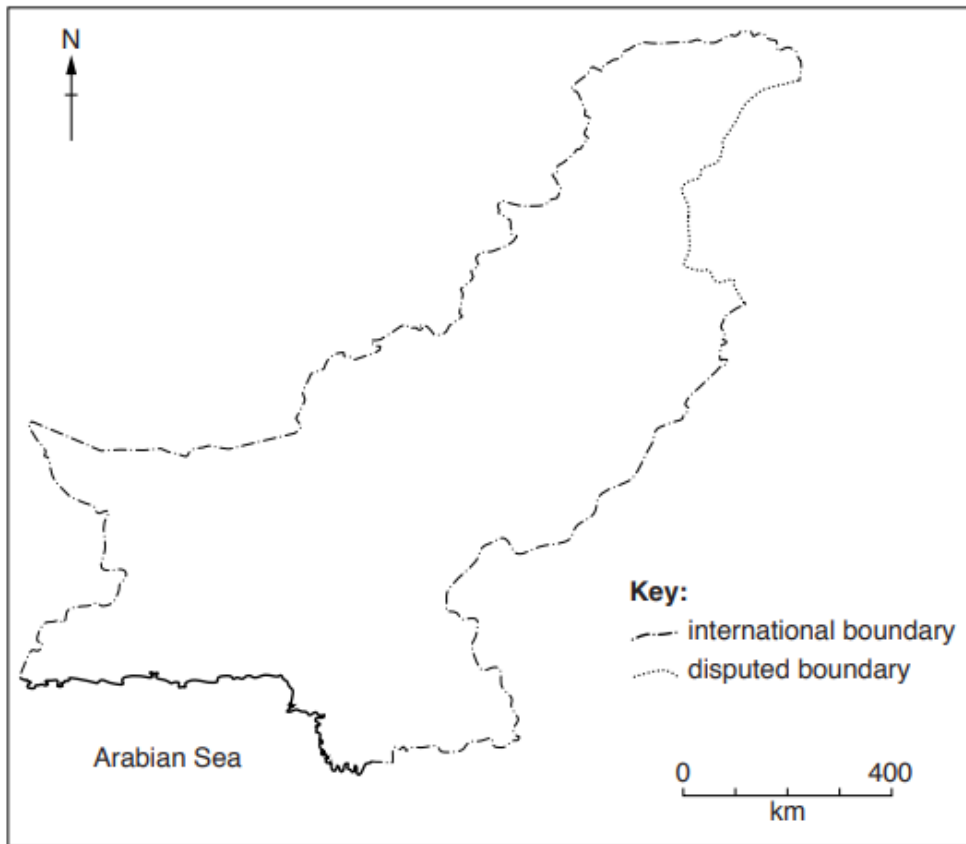


Fig. 1

- (ii) Name the crop which is mainly grown in these areas of low annual rainfall.

.....[1]

- (iii) Explain the difficulties for people living in areas of low rainfall.

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.....[3]

(b) (i) Study Fig. 2 which shows rainfall data for two cities on the River Indus.

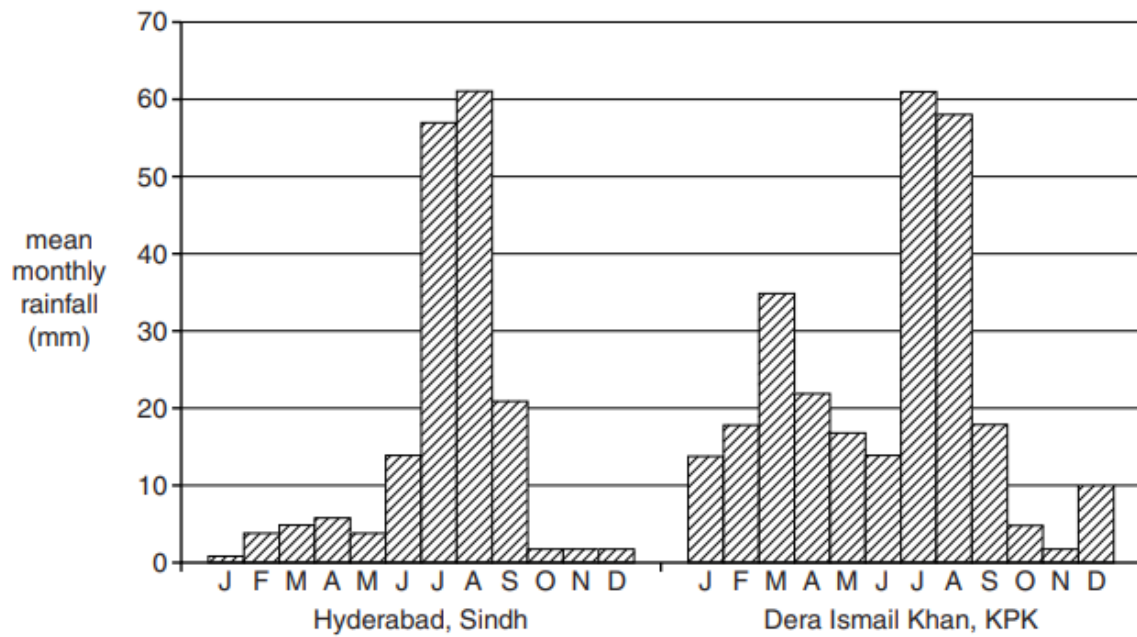


Fig. 2

A. Compare the amount and pattern of monthly rainfall in Hyderabad with that of Dera Ismail Khan.

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.....[3]

B. Give **three** reasons for any similarities or differences in the two patterns of rainfall.

1

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2

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3

.....[3]

- (ii) Explain the effect of flooding on the local economy and transport links in communities along the River Indus.

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.....[4]

Question 6

J2014/P2/Q3/A(i)

- (a) Study the map Fig. 5.

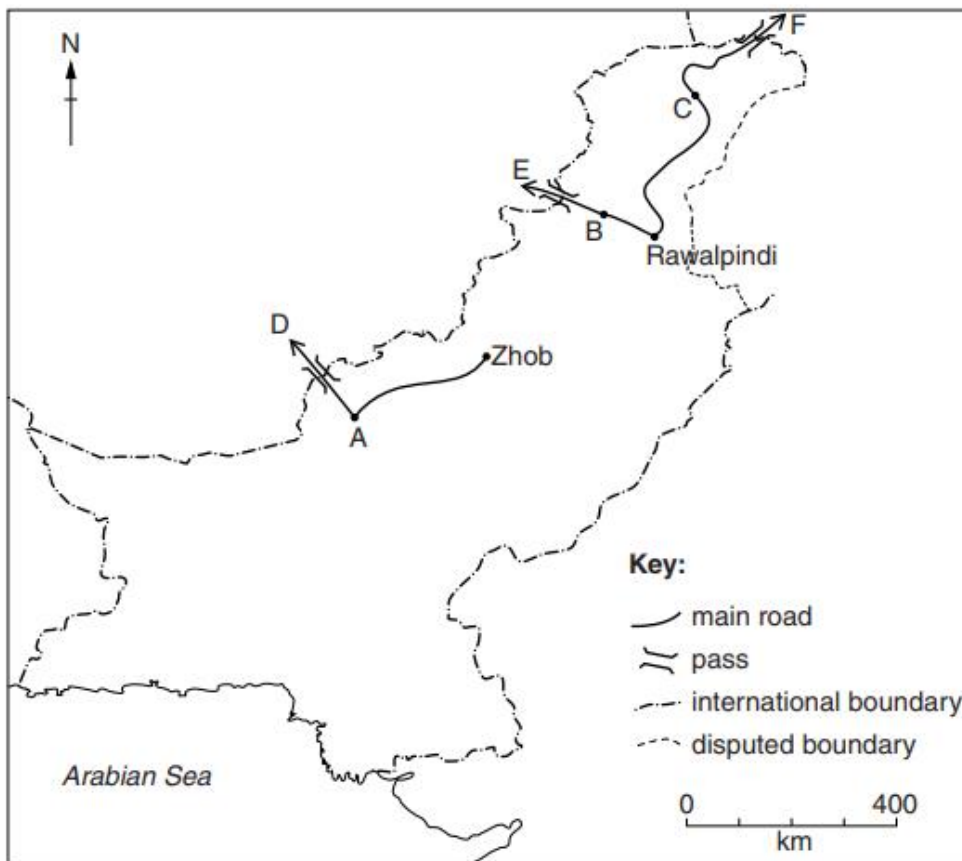


Fig. 5



(i) Name the towns A, B and C.

A B

C [3]

Question 7

J2014/P2/Q4/A(i-ii)

(a) Study Fig. 7, a map of deforestation in Pakistan.

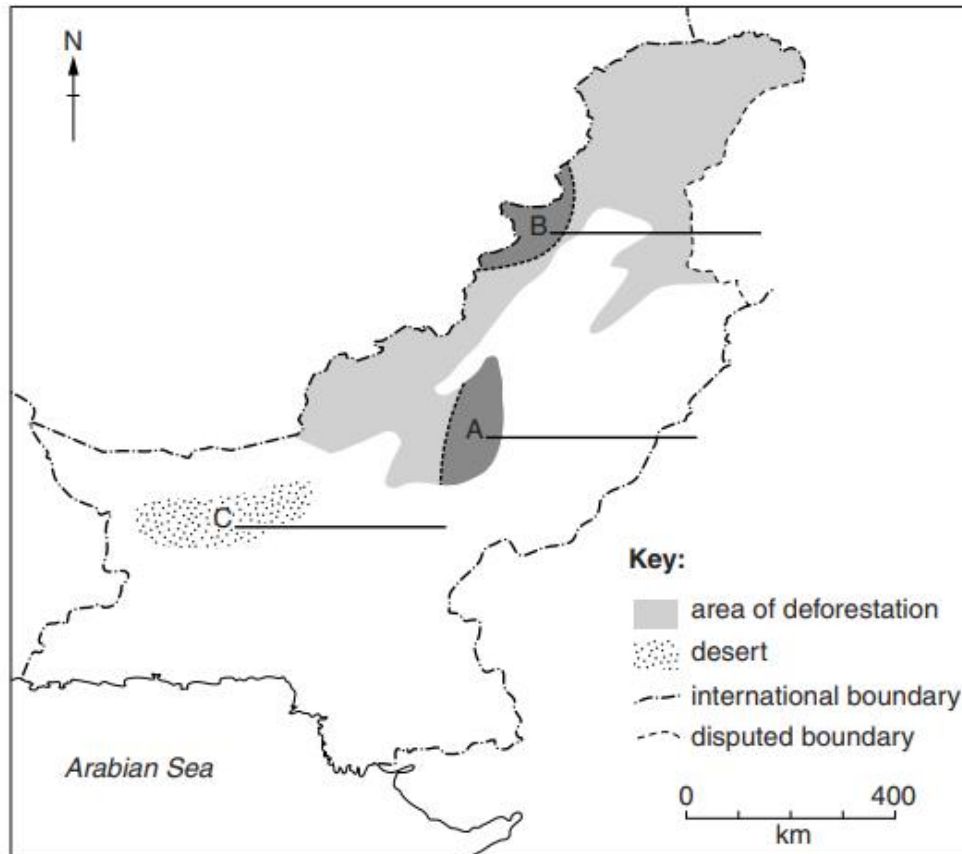


Fig. 7

(i) Name the areas of deforestation A and B. [2]

(ii) Name the desert C. [1]

OLEVEL PAK STUDIES | 2059/02 | TOPOGRAPHY AND CLIMATE

Cause 2

Months [4]

- (iii) What are the maximum and minimum temperatures at Quetta, and when do they occur?

Maximum..... Month.....

Minimum..... Month..... [2]

- (iv) Give **two** reasons why temperatures are higher in the summer than in the winter at Quetta.

1

.....

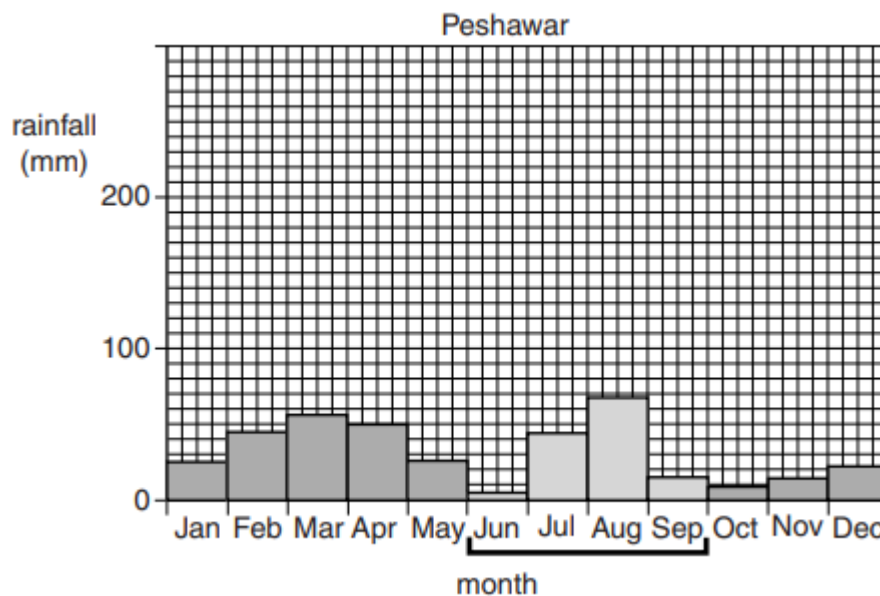
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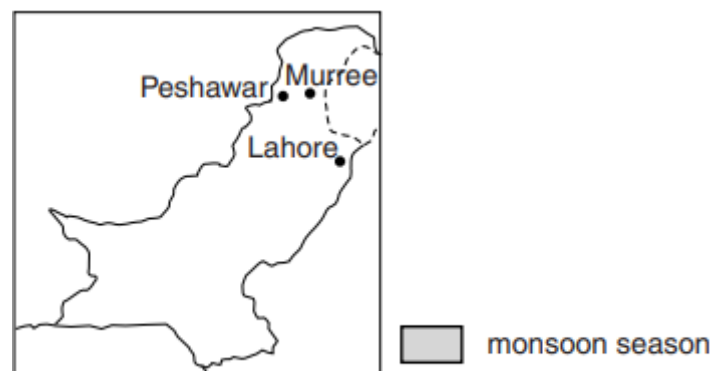
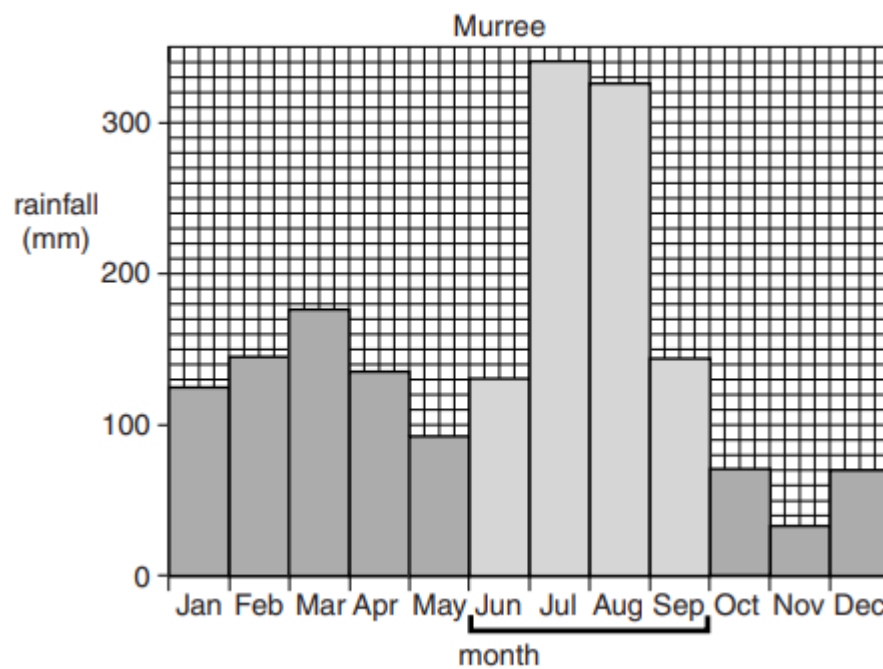
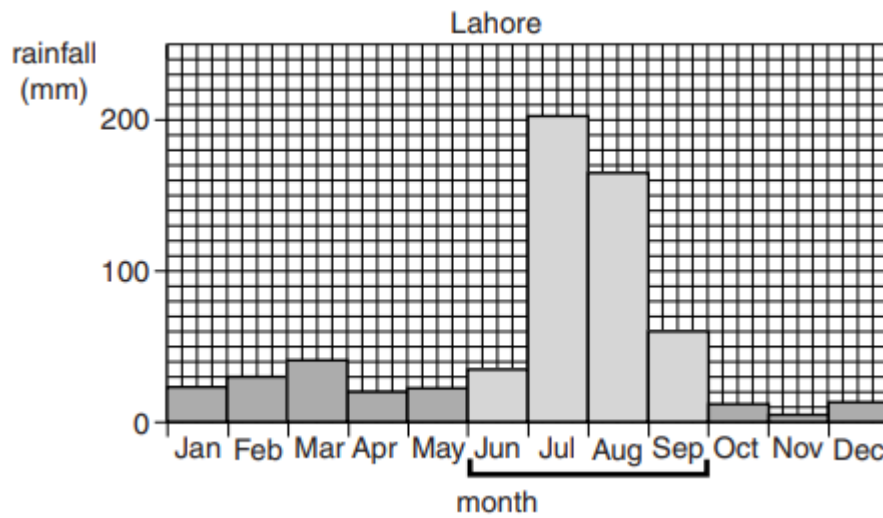
..... [2]

Question 9

J2013/P2/Q1

- (a) Study Fig. 1, which shows the rainfall of three cities in northern Pakistan.





- (i) For each of the following cities state the maximum rainfall and the month in which it falls.

Peshawar rainfall month
 Lahore rainfall month
 Murree rainfall month [3]

- (ii) Compare the amount and pattern of rainfall in Lahore and Peshawar **during the monsoon season**.

.....

 [3]

- (iii) Explain how the monsoon winds bring rainfall to northern Pakistan.

.....

 [4]

- (iv) Suggest **two** reasons why Murree has a higher rainfall than Lahore and Peshawar.

reason 1

 reason 2
 [2]

(b) (i) Circle **three** of the phrases below that describe a semi-arid climate.

- HIGH EVAPOTRANSPIRATION
- HIGH HUMIDITY
- HOT DAYS AND COLD NIGHTS
- RELIABLE RAINFALL
- THUNDERSTORMS
- LOW EVAPOTRANSPIRATION

[3]

(ii) Study Photograph A (Insert).



Explain how the ground surface and the vegetation show that this is an area of low rainfall.

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.....[4]

(c) Explain the benefits and problems of high rainfall on **either** farming **or** road travel.

Circle your choice.

FARMING

ROAD TRAVEL

benefits

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problems

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.....[6]

Question 10

J2012/P2/Q2/A-C

(a) Study Fig. 2 and name the following:

(i) the line of latitude A;

.....

(ii) the mountain pass B;

.....

(iii) the road C;

.....

(iv) the province D.

.....[4]

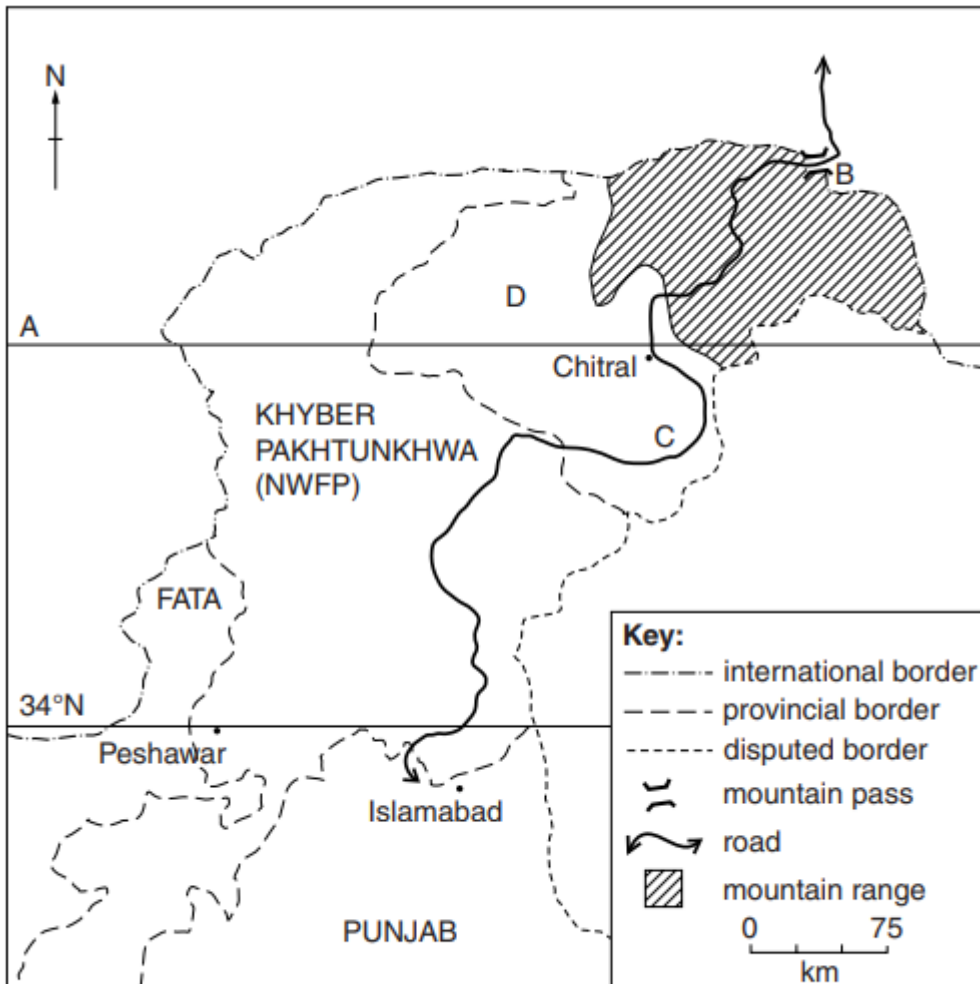


Fig. 2

(b) Study Fig. 3, which shows the climate of Gilgit.

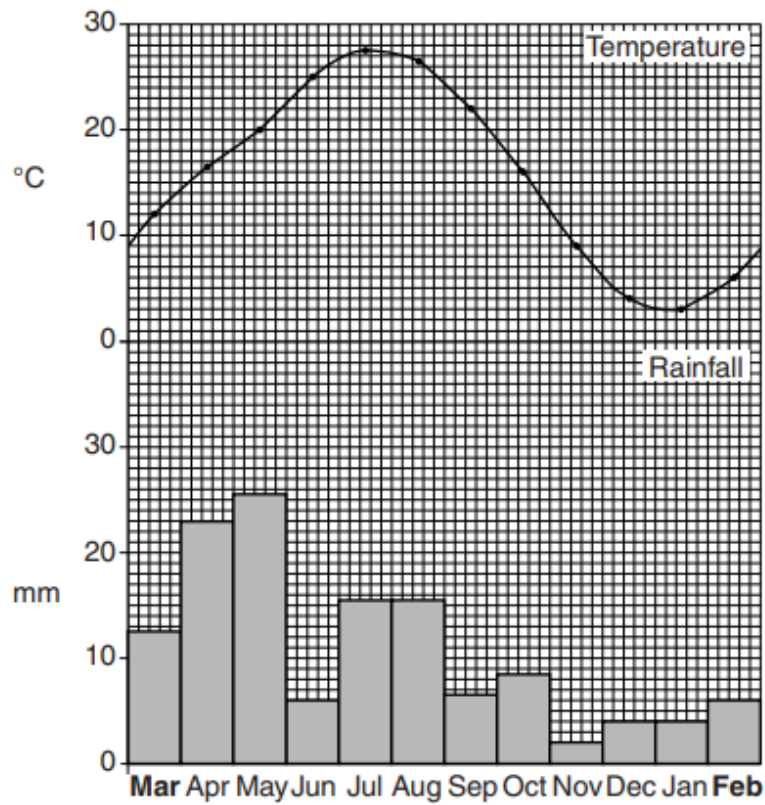


Fig. 3

(i) What is the maximum temperature, and in which month does it occur?

.....[2]

(ii) In which season of the year is the rainfall highest?

.....[1]

(iii) Compare the climate of the months from May to September with the months from November to February.

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[4]

- (c)** In what ways does the winter climate make life difficult for people who live in mountainous areas?

.....[6]

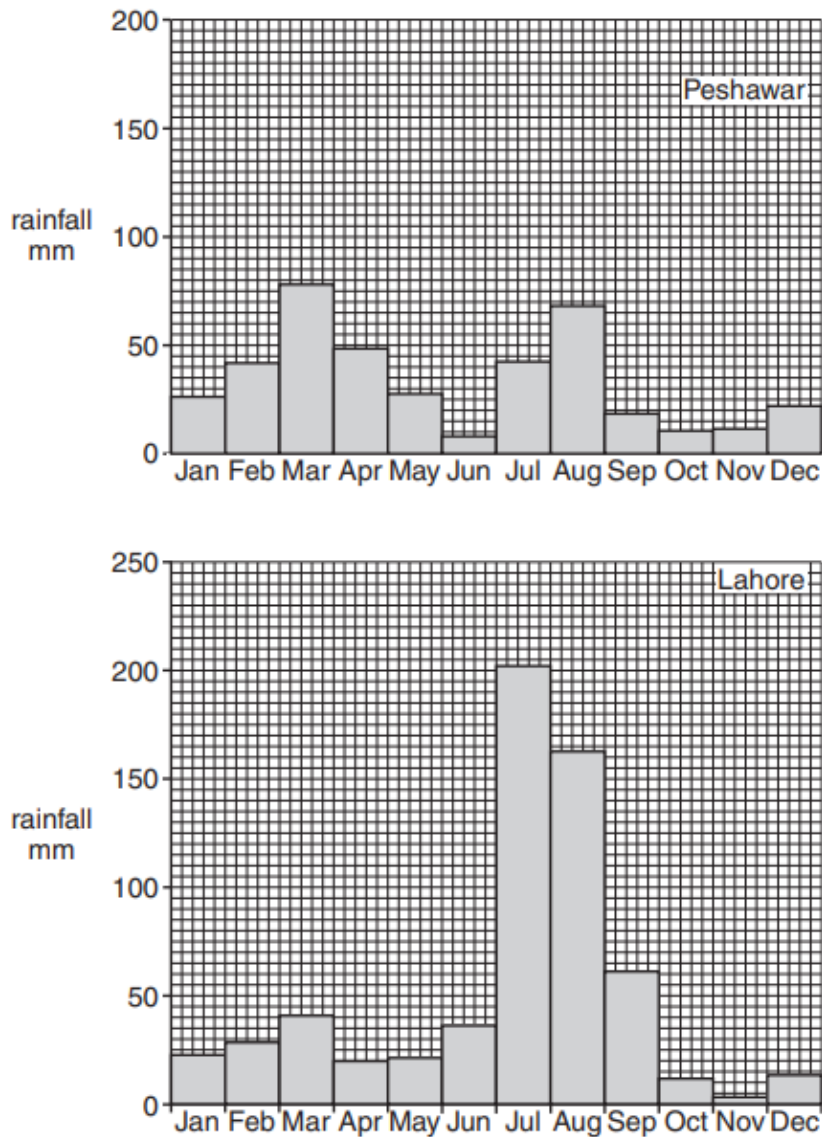
Question 11

J2011/P2/Q5

- (a) Describe the route of the main monsoon across Pakistan.

[3]

(b) Study Fig. 4, which shows the rainfall of Peshawar and Lahore.



(i) Using figures from Fig. 4 in your answer, compare the distribution of rainfall from June to September at Lahore and Peshawar.

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.....[4]

- (ii) Explain why there are differences in amounts of rainfall caused by the monsoon in different areas of Pakistan.

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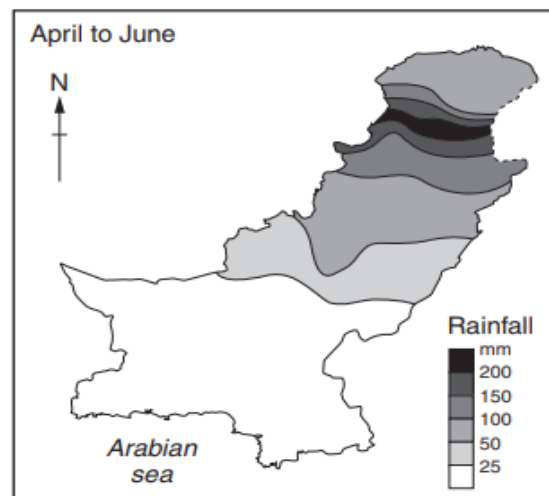
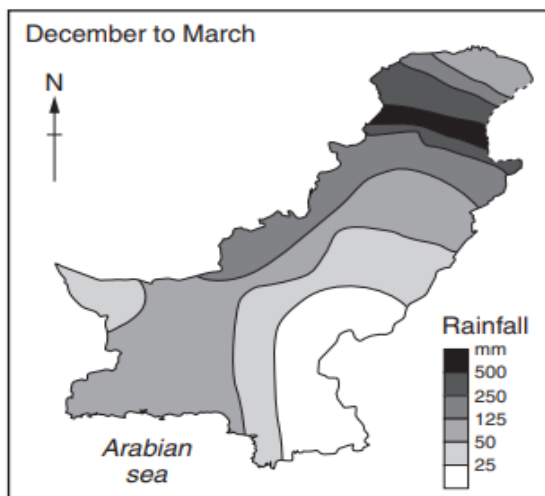
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.....[4]

- (c) Study Figs 5A and 5B, which show rainfall distribution in Pakistan.



Key

----- disputed international boundary



(i) What is the main cause of rainfall from:

A December to March?

.....

B April to June?

.....[2]

(ii) Name **one** area which receives high rainfall in both seasons A and B.

.....[1]

(iii) Which area receives the highest rainfall from December to March?

.....[1]

(iv) What are the advantages and disadvantages of winter rainfall in Northern Pakistan?

Advantages

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.....

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.....

.....

Disadvantages

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.....[6]

(d) Explain the importance of the arrival of the monsoon to people who live and work in urban areas.

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.....[4]

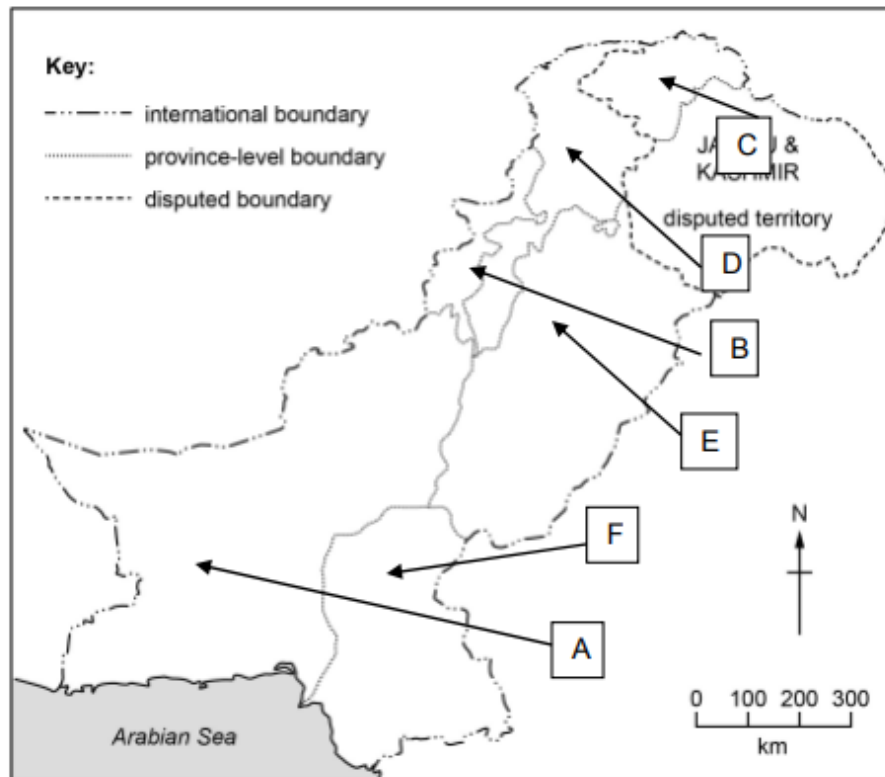


ANSWER KEY

Question 1

J2019/P2/Q1

1(a)(i)



3 @ 1 mark

1(a)(ii)

Y = Multan
Z = Hyderabad

2 @ 1 mark

1(b)(i)

- Flat / gentle slope / gentle valley side / doab;
- Wide;
- Boggy / marshy / water meadows / waterlogged;
- Fertile / rich soil or minerals / alluvial terraces / alluvium / silt / gravel;
- Levees;
- Oxbow lakes / meanders / braiding.

3 @ 1 mark

1(b)(ii)

- Farming / farmer's fields / growing crops / agriculture / cultivation;
- (Cattle) grazing / rearing buffalo;
- Fish farms / fish breeding / aquaculture;
- Industry;
- Transport or examples, e.g. roads / railways;
- Settlement / building / housing / homes;
- Irrigation / canals / drainage ditches.

2 @ 1 mark



1(c)(i)	Monsoon <u>winds</u> blow towards the heart of the <u>continent</u> in <u>summer</u>. They blow towards the sea in <u>winter</u>. 3 or 4 @ 2 marks 1 or 2 @ 1 mark														
1(c)(ii)	• Coming from sea / Arabian Sea / Bay of Bengal; • Sun heats up in (tropical) continents (land) faster or more quickly than the surrounding oceans (water); • Warm air rises; • Low pressure; • Attracts cool, moist air from the sea; • Rain bearing winds push further inland causing (heavy) rain / brings (heavy) rain. 3 @ 1 mark														
1(c)(iii)	• Floods (any idea from below for development); • Heavy rain; causes poor visibility and accidents (dev); • Roads become rivers; cannot travel to work or school / towns and cities cut off (dev); • Flights cancelled; negative impact on trade / tourism / business (dev); • Crops destroyed; which causes food shortages / can lead to famine (dev); • Water level in reservoirs or dams rises; leading to more water for irrigation / domestic / industrial use / no water shortages / HEP (dev); • Businesses / markets are closed; leading to loss of income / produce / jobs disrupted (dev); • Homes washed away / flooded / buildings destroyed; loss of possessions / people are homeless (dev); • People are injured / killed; pressure on healthcare services / impact on mental health / impacts on business and economy (dev); • Stagnant water; causes diseases (dev); • Waterlogging: impacts on the economy as Pakistan is an agriculturally based country (dev); • Brings rainfall to desert areas; desert blooms (dev); • Replenishes groundwater; reduces water shortages (dev); - Etc. Note: One mark for identification of appropriate idea and a further mark for development (in parentheses). Note: Max. 2 marks if no development. 2 @ 2 marks														
1(d)	Levels marking <table> <tr> <td>No valid response</td><td>0</td></tr> <tr> <td>Level 1</td><td>1–2</td></tr> <tr> <td>Simple point referring to any view (1)</td><td></td></tr> <tr> <td>Simple points referring to any view (2)</td><td></td></tr> <tr> <td>Level 2</td><td>3–4</td></tr> <tr> <td>Developed point referring to one view only (3)</td><td></td></tr> <tr> <td>Developed points referring to both views (4)</td><td></td></tr> </table>	No valid response	0	Level 1	1–2	Simple point referring to any view (1)		Simple points referring to any view (2)		Level 2	3–4	Developed point referring to one view only (3)		Developed points referring to both views (4)	
No valid response	0														
Level 1	1–2														
Simple point referring to any view (1)															
Simple points referring to any view (2)															
Level 2	3–4														
Developed point referring to one view only (3)															
Developed points referring to both views (4)															

**Level 3**

5–6

Developed points referring to both views with evaluation or relevant example (5)

Developed points referring to both views with evaluation and relevant example (6)

Content Guide

Answers are likely to refer to:

Building more flood management schemes

- So many people are affected;
- Many people killed / injured;
- Homes / farms / businesses destroyed;
- Cost of clear up and losses on economy;
- Floods hinder development as constantly having to rebuild / replace infrastructure;
- Loss of days at school affects literacy rates / skills base;
- Loss of days at work has an impact on revenue and tax collected;
- Tax changes to cover cost of damage;

Etc.

Allowing rivers to flood naturally

- Rivers provide nutrients to soil, so good for farming;
- Should not build on flood plain;
- Cost of management / flood protection is high;
- Flood management needs to be maintained and updated, incurring ongoing costs;
- Money is better spent on developing infrastructure, e.g. services, transport and industry;
- Flood plains can be used for fish farming;
- Flood plains can be used to channel water for irrigation;

Etc.

Question 2**J2018/P2/Q1**

1(a)(i)	The following labelled in the correct locations: ∞ Afghanistan – to west of Pakistan; ∞ India – to east of Pakistan; ∞ Longitude 70 °E – middle line of the three on map.	3 @ 1 mark
1(a)(ii)	∞ Accurately drawn line for position of Tropic of Cancer; ∞ Accurate label.	2 @ 1 mark
1(a)(iii)	∞ Western part of South Asia; ∞ India to the East / South East / North East; ∞ China to the North / North East; ∞ Afghanistan to the North West / West; ∞ Iran to the West / South West; ∞ Between / shares border with / neighbouring country with China / India / Afghanistan / Iran;	



	∞ Compass direction to any of the following non-conjoining countries in South and Central Asia ONLY: Nepal / Tajikistan / Kyrgyzstan / Turkmenistan / Uzbekistan / Sri Lanka / Bangladesh / Maldives / Burma (Myanmar); ∞ Distance to any the following non-conjoining countries in South and Central Asia ONLY: Nepal / Tajikistan / Kyrgyzstan / Turkmenistan / Uzbekistan / Sri Lanka / Bangladesh / Maldives / Burma (Myanmar). 3 @ 1 mark
1(b)(i)	∞ Sand / sandy; ∞ Sand dunes / ridges / hills / hilly; ∞ Large area / expanse / plain / plains; ∞ Sparse / scant vegetation / not much greenery / few trees / lack of trees; ∞ Small bushes / thorny bushes / scrub / rakh / shrubs; ∞ Barren / bare / dry; ∞ Oasis. 3 @ 1 mark
1(b)(ii)	Challenges such as: ∞ High temperatures / hot (during day) / cold at night / uncomfortable living conditions; ∞ Lack of / little / unreliable rainfall; ∞ Difficult to grow crops / carry out agriculture; ∞ Difficult to rear animals; ∞ Lack of water / travel long distance to find water / low water table; ∞ Dust / sandstorms; ∞ Infertile soils / lack of nutrients / lack of humus produced; ∞ Reliable food supply; ∞ Isolated / far from urban areas / remote; ∞ Inaccessible / poor / lack of roads; ∞ Wild / poisonous animals. Etc. Note: One mark for identification of appropriate idea and a further mark for development (in parentheses). Note: Max. 2 marks if no development. 2 @ 2 marks
1(b)(iii)	∞ Cold / cool / low temperatures / freezing temperatures; ∞ Relief rainfall; ∞ Snow (capped peaks) / blizzards; ∞ Ice / hail; ∞ Windy; ∞ Dry; ∞ Sunny / bright / clear skies OR few sunny days / cloudy. 2 @ 1 mark



1(c)	∞ The further north (from the equator) the cooler it is / north is cold; ∞ The closer to the equator the warmer it is / southern Pakistan is warmer / south Pakistan is hot; ∞ In the south / the closer to the equator the more convectional rainfall / more thunderstorms; ∞ More concentrated / direct rays of sunshine / higher angle of sun nearer equator (so higher temperatures). 2 @ 1 mark
1(d)	Levels marking No valid response 0 Level 1 1–2 Simple point addressing any view (1) Simple points addressing any view (2) Level 2 3–4 Developed point(s) explaining one view (3) Developed point(s) explaining both views (4) No evaluation Level 3 5–6 Developed points explaining both views Evaluation giving clear support to one view or appropriate example (5) Evaluation giving clear support to one view and appropriate example (6) Content Guide Answers are likely to refer to: Description of the topography in the north of Pakistan compared to other areas. <u>Limits to human activity and development</u> Availability of flat land; Impact of topography on climate; Restrictions to developing named examples of industry / farming / other named examples of human activity and economic development; Restrictions to developing named examples of infrastructure, e.g. roads / telecommunications / internet / other named examples of human activity and economic development. <u>Encourages human activity and development</u> Transhumance; HEP / Hydel / dams; Cottage industries; Tourism. Etc.



Question 3

J2016/P2/Q1/A

(a) Study Fig. 1 which is a map of northern Pakistan.

(i) On the map name the following: Mountain range A; City B; River C [3]

A: Himalaya(s)

B: Murree

C: Jhelum

(ii) Explain the causes of high rainfall at city B. [4]

Receives rainfall in all seasons /throughout year

Monsoon (from Bay of Bengal) (via N India)

Western depressions (from Mediterranean) (from Afghanistan/Iran)

Relief rainfall (air rises over mountains and cools/condenses)

Thunderstorm / convection / convectional rain/currents (hot air rises [in summer] and cools)

Question 4

J2016/P2/Q5/A(i)

(a) Study Fig. 9 which is a map of southern Pakistan.

(i) On the map name the following: Line of longitude A; River B; City C [3]

A: – 64E

B: – Dasht

C: – Karachi

Question 5

J2015/P2/Q1/A-B

(a) (i) On the outline map of Pakistan Fig. 1 mark and shade two areas which experience low annual rainfall (125mm or less). [2]

Any two separate regions within the overlay provided. Shaded areas may touch lines but not go outside lines.

1 mark for each accurately drawn and shaded region

(ii) Name the crop which is mainly grown in these areas of low annual rainfall. [1]

Dates

(iii) Explain the difficulties for people living in areas of low rainfall. [3]

Very little pasture/have nomadic lifestyle with livestock

Very little arable area limited to oases/valley floors or where Karez underground irrigation/limited crops/shortage of food

Few rivers/water has to be supplied from great distances/lack of water for irrigation/irrigation needed

Lack of water for cleaning/hygiene/domestic use/drinking

Lack of water for industries

Problems associated with an arid climate, e.g. dust storms/extreme temperatures/seasonal drought



(b) (i) Study Fig. 2 which shows rainfall data for two cities on the River Indus.

A Compare the amount and pattern of monthly rainfall in Hyderabad with that of Dera Ismail Khan. [3]

Amount

Both high Jul and Aug

Both identical Jun/Nov

Both low Oct/Nov

For Dera Ismail Khan (accept converses for Hyderabad)

Greater total

274 mm as opposed to 179 mm

Higher in all months except Aug and Sep/any named month / lower in

Aug/Sep

A pair of stats to illustrate for any month (e.g. May H – 4 mm, DIK – 17 mm)

Max 1

Tolerances: ± 1 mm

Pattern

Both maximum Jul–Aug

For Dera Ismail Khan (accept converses for Hyderabad)

Has double maximum Jul–Aug and Mar (H – one maximum)

Has more evenly distributed rainfall over the year (H – more variable)

B Give three reasons for any similarities or differences in the two patterns of rainfall. [3]

Both experience monsoon rainfall [Jul–Sep]

Dera Ismail Khan experiences rainfall from western depressions [Dec–Mar]

Dera Ismail Khan experiences some thunderstorm rainfall [Apr–Jun]

Accept converses for Hyderabad

(ii) Explain the effect of flooding on the local economy and transport links in communities along the River Indus. [4]

Local economy

Livestock/crops/farm equipment/fisheries lost (causing loss of income)

Factories/workplaces temporarily closed (causing damage/unemployment/loss of production/income/profit)

Electricity supply disrupted (factories closed)

Build up of silt behind dams (less water storage/effect on HEP production)

Alluvium/nutrients deposited by flood water (fertilises soil)

Transport Links

Bridges washed away (limiting ability to trade)

Roads/railways destroyed/damaged/flooded (making journeys longer/slower/more dangerous)

Rivers become unnavigable (communications cut/villages cut off)

Allow development of points illustrated by information in parentheses



Question 6

J2014/P2/Q3/A(i)

(a) Study the map Fig.5

(i) Name the towns A, B and C [3]

A – Quetta
B – Peshawar
C – Gilgit

(ii) Name one of the passes D, E and F shown on Fig. 5, and name the country that it links to Pakistan. [2]

D – Khojak pass – Afghanistan
E – Khyber pass – Afghanistan
F – Khunjerab pass – China

(iii) Give two reasons why air transport is used to carry lightweight or valuable goods to other countries instead of roads. [2]

Safety / less likely to be damaged / stolen / less risk of accidents
Speed

Question 7

J2014/P2/Q4/A(i-ii)

(a) Study Fig. 7, a map of deforestation.

(i) Name the areas of deforestation A and B. [2]

A – Sulaiman Range
B – Safed Koh / FATA

(ii) Name the desert C. [1]

Kharan desert

Question 8

J2013/P42/Q1/A

(a) (i) winter maximum

most from December to April
second max in July and August
none in September [3]

(ii) western depressions December to April
monsoon July and August [4]

(iii) maximum 28 °C July
minimum 4 °C January [2]

(iv) Sun higher in the sky / higher angle of insolation
Longer hours of daylight
Less cloud [2]

**Question 9****J2013/P2/Q1**

- (a) (i) For each of the following cities state the maximum rainfall and the month in which it falls.

Peshawar	68/69 mm, August
Lahore	201/202 mm, July
Murree	340 mm, July

[3]

- (ii) Compare the amount and pattern of rainfall in Lahore and Peshawar during the monsoon season.

Lahore

more rain/higher maximum
increase then decrease
earlier maximum/max in July
tails off more slowly
comparative figures (other than those from (i))

Peshawar

Credit comparison of above

[3]

- (iii) Explain how the monsoon winds bring rainfall to northern Pakistan.

from the sea/Bay of Bengal/Indian Ocean
this increases the moisture content
rise over land
air cools
condensation

[4]

- (iv) Suggest two reasons why Murree has a higher rainfall than Lahore and Peshawar.

higher altitude/mountainous
more thunderstorms
more western depressions
windward slope
more vegetation/forests

[2]

- (b) (i) Circle three of the phrases below that describe a semi-arid climate.

HIGH EVAPOTRANSPIRATION
HOT DAYS AND COLD NIGHTS
THUNDERSTORMS

[3]

- (ii) Study Photograph A (Insert)

Explain how the ground surface and the vegetation show that this is an area of low rainfall.

Ground (res. 1)

bare/barren ground
sand
small stones

Vegetation (res. 1)

scattered, e.g. sparse/scanty
lack of greenery/pale brown/not green
low bushes/shrubs/scrub/not tall
adaptations seen in photograph, e.g. thorns/thin leaves etc.

[4]



(c) Explain the benefits and problems of high rainfall on either farming or road travel.

FARMING

Benefits (res. 2):

increased water supply/less need for irrigation
alluvium from floods
reduces salinity
better plant growth
higher yield/income
benefit to animals

Problems (res. 2):

flooding
waterlogging
water is not absorbed
soil erosion/gullyng
leaching
risk of pests/disease
damage at harvest, e.g. cotton, wheat
intensity can damage plant
loss of income (do not credit twice)

ROAD TRAVEL

Benefits (res. 2):

lays the dust
water to cool engine

Problems (res. 2):

flooding blocks roads/restricts access
washes away surface
destroys bridges
danger of lightning
danger to driving, e.g. slippery

[6]

Question 10

J2012/P2/Q2/A-C

(a) Study Fig. 2 and name

(i) the line of latitude A

36°N

(ii) the mountain pass B

Khunjerab

(iii) the road C

Karakoram Highway / KKH / Silk Road

(iv) the province D(4)

Northern Area(s) / FANA / Gilgit – Baltistan

(b) Study Fig. 3 showing the climate of Gilgit.

- (i) What is the maximum temperature, and in which month does it occur? [2]

27.5 °C
July

- (ii) In which season of the year is the rainfall highest? [1]

Spring / early summer / March to May

- (iii) Compare the climate of the months May to September with the months from November to February. [4]

May to September

Hotter
Over 18 °C / 18–27.5 °C
Wetter
Variable rain low/increasing
6–26 mm

November to February

Colder
Under 12 °C / 3–12 °C
Drier
rain/snow fall
2–6 mm

All figures must be comparative, and accurate

- (c) In what ways does the winter climate make life difficult for people who live in mountainous area? [6]

snow covers ground (or reference to snow)
water shortage / water freezes
no farming in winter / nothing grows / need to store food / no fishing
live indoors / cannot work outside
animals kept in sheds / need feeding / no pasture
roads or railways blocked / closed / no travel / communication
damage to buildings eg. by avalanches, landslides, frozen pipes / death of people
fog / no air travel
power lines cut
telephone lines cut / no telecommunication
no tourism
need to keep warm / need for heating
long nights / short days
less income / less work / less trade / economic activity stops

Question 11

J2011/P2/Q5

- (a) Describe the route of the main monsoon across Pakistan. [3]

East to west / from NE / from East
From Bay of Bengal / Northern India
Across Punjab / upper Indus Plain
Towards the Northern Areas / mountains / interior Asia

- (b) Study Fig. 4, which shows the rainfall of Peshawar and Lahore.

- (i) Using figures from Fig. 4 in your answer, compare the distribution of rainfall from June to September at Lahore and Peshawar. [4]

Comparative figures (res. 1)

Max 68 mms in Peshawar, 202 mms in Lahore
Totals June – September
Figures for any one month with comparative word



Comparisons

Less in Peshawar

Maximum later in Peshawar

Max in Aug in Peshawar, July in Lahore

Annual minimum in June in Peshawar but not Lahore

NB candidates must write about distribution of rain over the period.

- (ii) **Explain why there are differences in amounts of rainfall caused by the monsoon in different areas of Pakistan.** [4]

Depends on moisture content / humidity

Loses moisture / drier as it crosses the land / Pakistan is at the tail end

More rain as it rises over hills

Condensation / clouds caused by cooling of rising air

Rain shadow effect on lee slopes

Climate change with reason e.g. global warming, ozone layer (max 1)

- (c) **Study Figs 5A and 5B, which show rainfall distribution in Pakistan.**

- (i) **What is the main cause of rainfall from:** [2]

A December to March?

Western depressions

B April to June?

Convection currents / thunderstorms

- (ii) **Name one area which receives high rainfall in both seasons A and B.** [1]

N Punjab / central NWFP / Peshawar

See atlas for a named district in these areas

- (iii) **Which area receives the highest rainfall from December to March?** [1]

More than in summer – Western borders / Quetta

More than rest of Pakistan – N Punjab / central NWFP / Peshawar

See atlas for a named district in these areas

- (iv) **What are the advantages and disadvantages of winter rainfall in Northern Pakistan?** [6]

Advantages (res. 2)

Fills reservoirs / rivers / more storage

Water for irrigation

Water for HEP

Water for barani crops

Water for kharif / winter crops / fruit trees

Water when everything else is frozen

Lighter form of rain – can soak in

Snow for tourism

Disadvantages (res. 2)

May fall as snow

Rivers / lakes frozen

Temperatures too cold for growth

}
} so of little use
}



Damage to environment – landslides, mudslides, floods etc. (allow avalanches) (max 1)
 Damage to roads – blockage, slippery etc.
 Silt collects in reservoirs / dams
 Difficulties meaning farmers must do transhumance/ nomadism

- (d) **Explain the importance of the arrival of the monsoon to people who live and work in urban areas.** [4]

Benefits

Cooler – better working and living conditions / pleasant climate
 Fresher – less dust, pollution, cleaner air
 Water supply – for drinking, factories, market gardens, buffalo (not rural farming)

Problems

Flooding (up to 2 marks)
 People cannot get to work
 Loss of production

NB. Urban areas only

Max 2 marks for any line

WINTERS PAST PAPERS 2019-2011

Question 1

N2019/P2/Q1/A-B

(a) Study Fig. 1.1, an outline map of Pakistan.

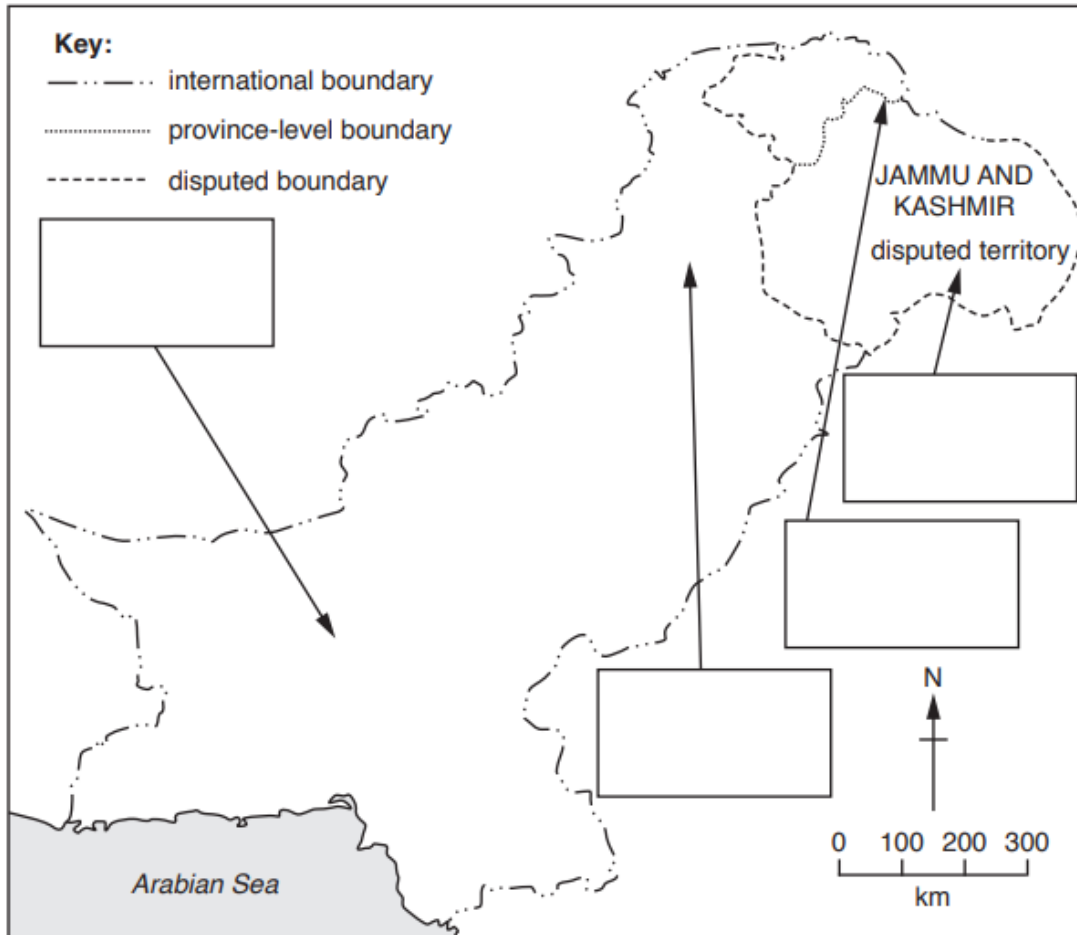


Fig. 1.1

(i) On the map name the following landforms in the boxes provided: Balochistan Plateau; Himalayan Ranges; Karakoram Range; Salt Range. [4]

(ii) Study Fig. 1.2 (Insert). Identify the mountain feature labelled A in the photograph.

A [1]

(b) (i) Define the term 'topography'.

..... [1]

(ii) Describe the natural topography of the northern regions.

.....

.....

.....

.....

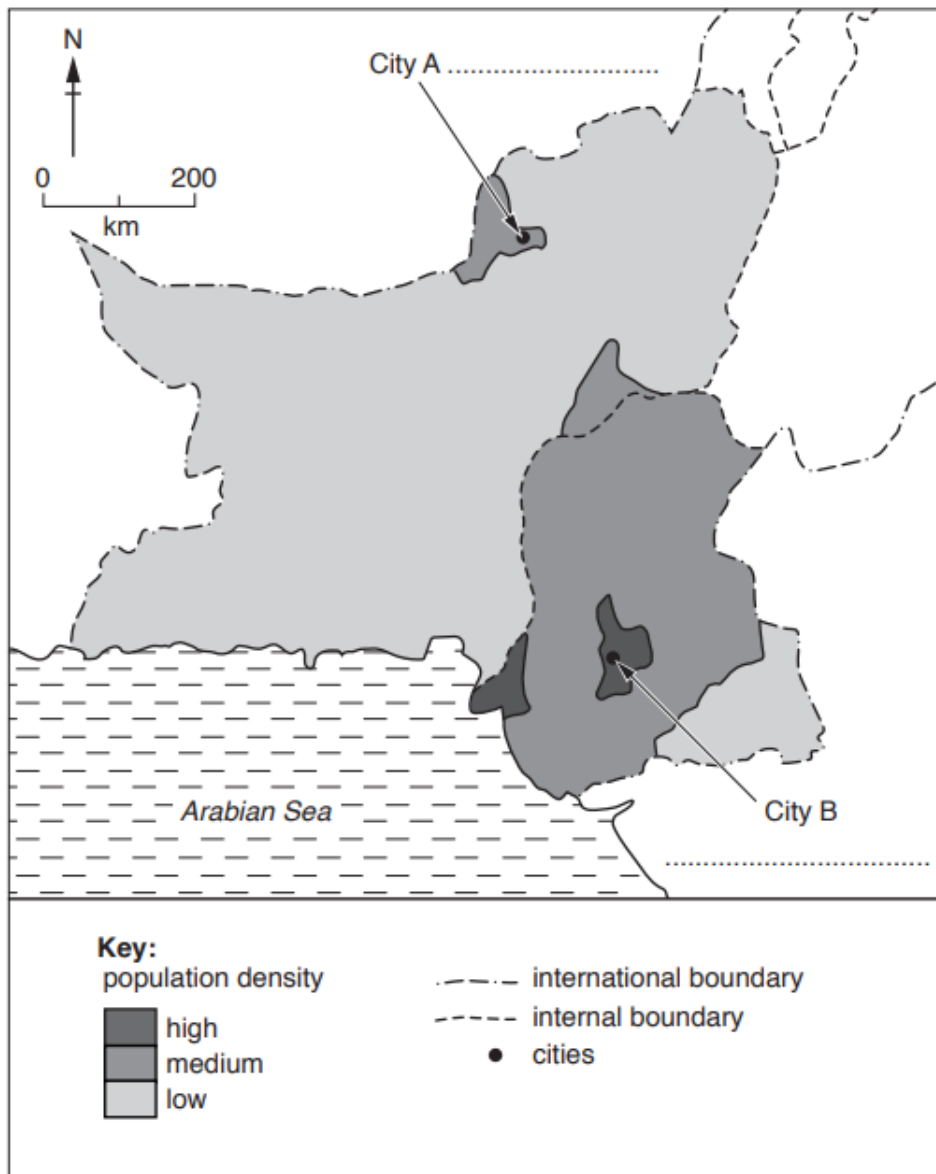
.....

..... [3]

Question 2

N2017/P2/Q2/C(i-ii)

(c) Study Fig. 3, a map which shows the distribution of population in southern Pakistan.



(i) On the map name the following: City A; City B. [2]

(ii) Name one area of low population density shown on Fig. 3.
.....[1]

Question 3

N2017/P2/Q4/A

(a) Study Fig. 5, which is a map of southern Pakistan.

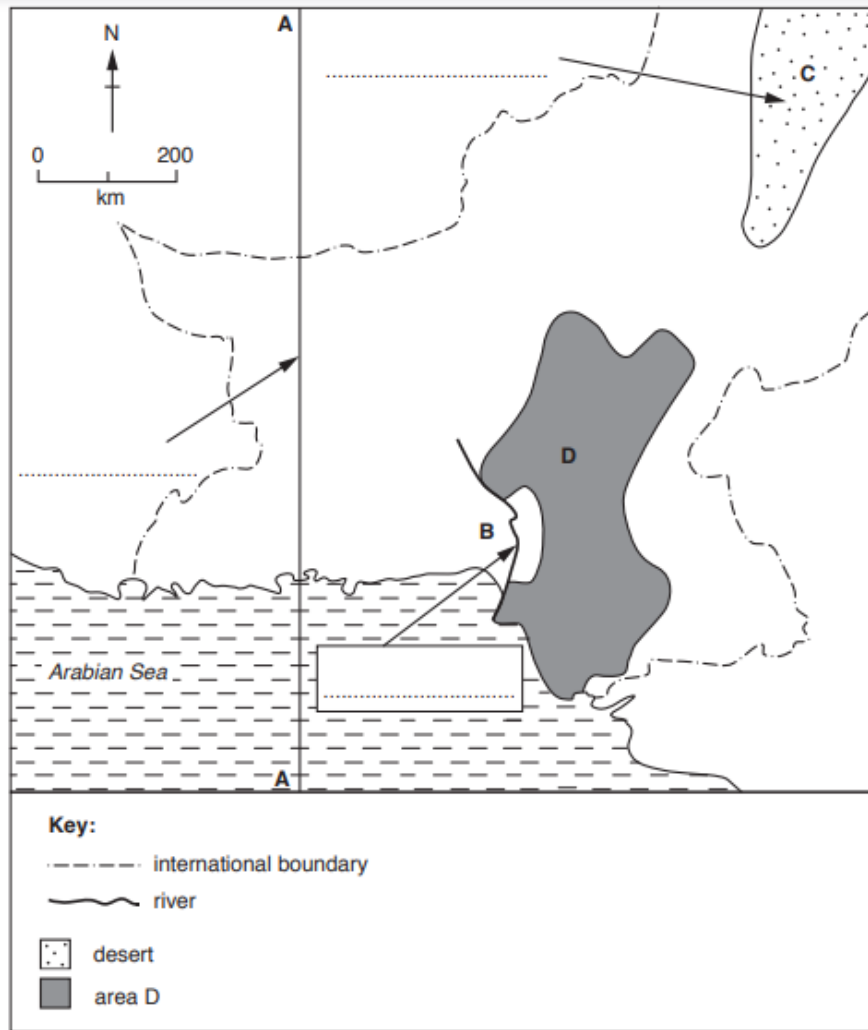


Fig. 5

(i) On the map name the following: Line of longitude A–A; River B; Desert C. [3]

(ii) Describe the natural topography (relief) of Area D on the map.
.....
.....
.....

.....

[3]

(iii) Give reasons why the Indus River floods.

.....

[2]

Question 4

N2017/P2/Q5/A,C

(a) Study Fig. 7, which shows climate data for Lahore, Punjab. Lahore has a monsoon climate.

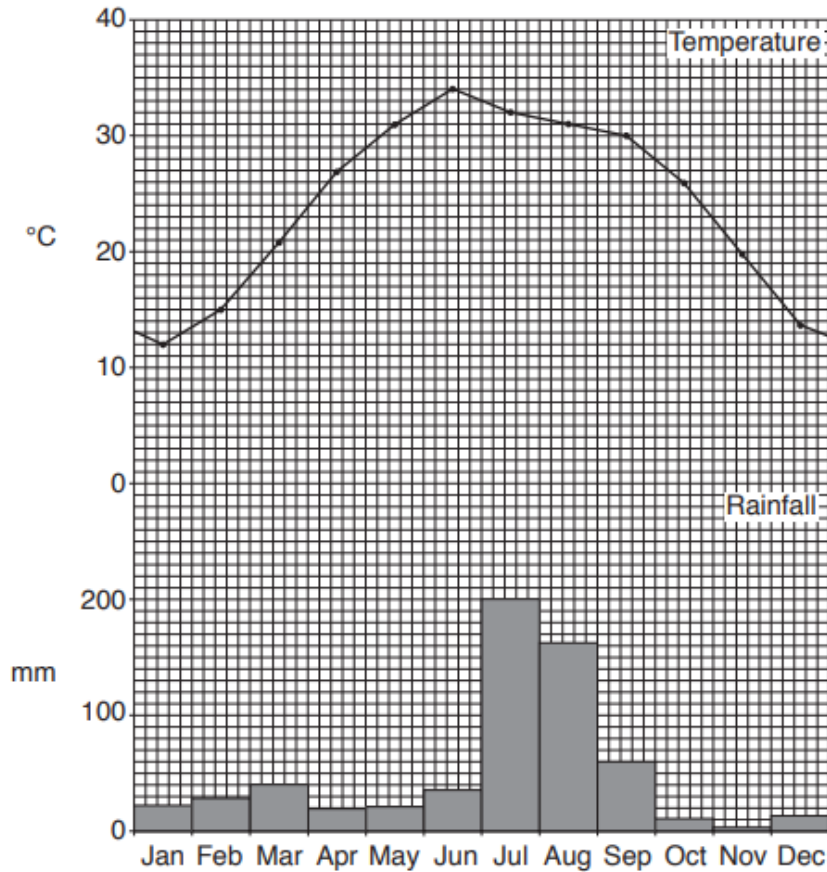


Fig. 7

(i) What is meant by the term 'monsoon'?

.....

.....[1]

(ii) How does Fig. 7 show that the climate in Lahore is typical of a monsoon climate?

.....

.....

.....

.....[2]

(iii) Give reasons why Lahore has more rainfall in July than in December.

.....

.....

.....

.....[2]

(c) (i) A provincial capital city regularly has the lowest temperatures in Pakistan. Name this city.

.....[1]

(ii) Describe **four** impacts of low temperatures on people who live and work in mountain areas.

1

.....

2

.....

3

.....

4

.....[4]

Question 5

N2016/P2/Q1/A

(a) Study Fig. 1 which shows the distribution of monthly rainfall in Karachi.

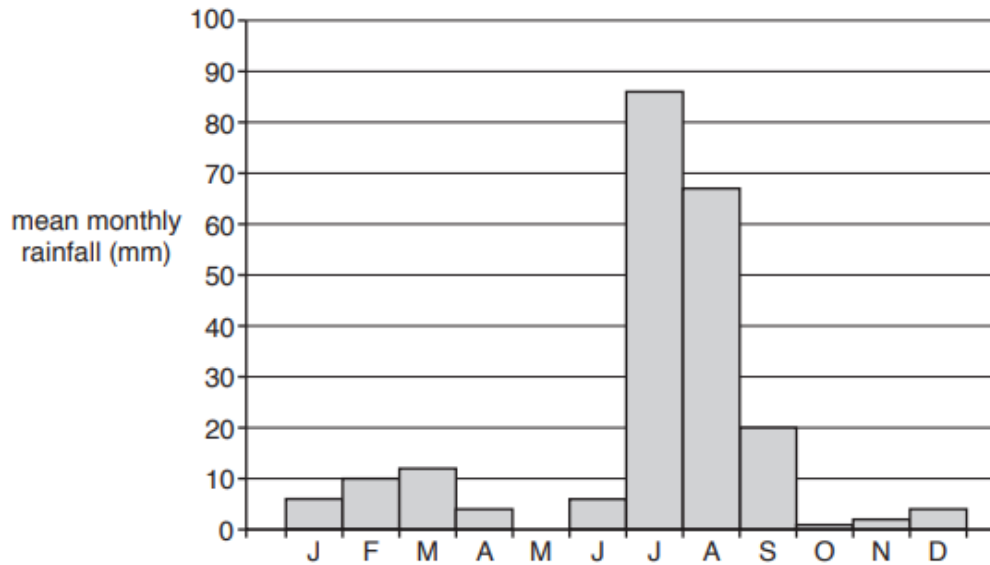


Fig. 1

(i) A For how many months does Karachi experience less than 10 mm rainfall?

.....

B Estimate the total rainfall in Karachi for the period July to September.

.....[2]

(ii) Describe briefly the climatic region in which Karachi is located.

.....[1]

(iii) What is the main source of rainfall in Karachi? From which direction do the rain-bearing winds come?

Source

Direction[2]

(iv) Describe the effects of tropical cyclones on cities such as Karachi.

.....

.....

[4]

Question 6

N2015/P2/Q2/C

(c) (i) A. From the list below, circle **one** place which regularly experiences the highest temperatures in June in Pakistan.

Quetta Karachi Jacobabad Abbottabad Larkana Zhob

B. Which range best describes the highest temperatures recorded? Put a tick in **one** of the boxes below.

Temperature (°C)	TICK
46–48	
49–51	
52–54	

[2]

(ii) Explain why the place you have named in (i) is the hottest place in Pakistan.

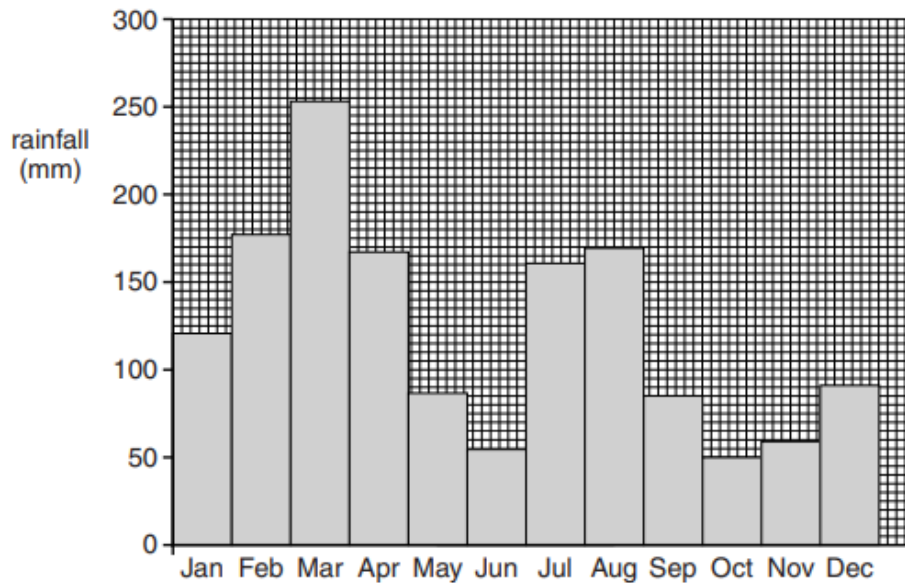
.....

[2]

(iii) Describe the effects on people of living in extremely hot climates.

.....

[3]

**Question 7****N2014/P2/Q3/A****(a)** Study Fig. 3, a graph showing rainfall in Dir, Khyber Pakhtunkhwa.**Fig. 3****(i)** What is the minimum rainfall, and when does it occur?

.....

.....[2]

(ii) What is the maximum rainfall, and when does it occur?

.....

.....[2]

(iii) For how many months between October and June is the rainfall above 80 mm?

.....[1]

(iv) Give **two** causes of high rainfall between October and June at Dir.

.....

.....[2]

(v) What is the main cause of summer rainfall at Dir? 

.....[1]

Question 8

N2013/P2/Q1/B

(b) Study Fig. 1, a map showing the main sugar-cane growing areas.

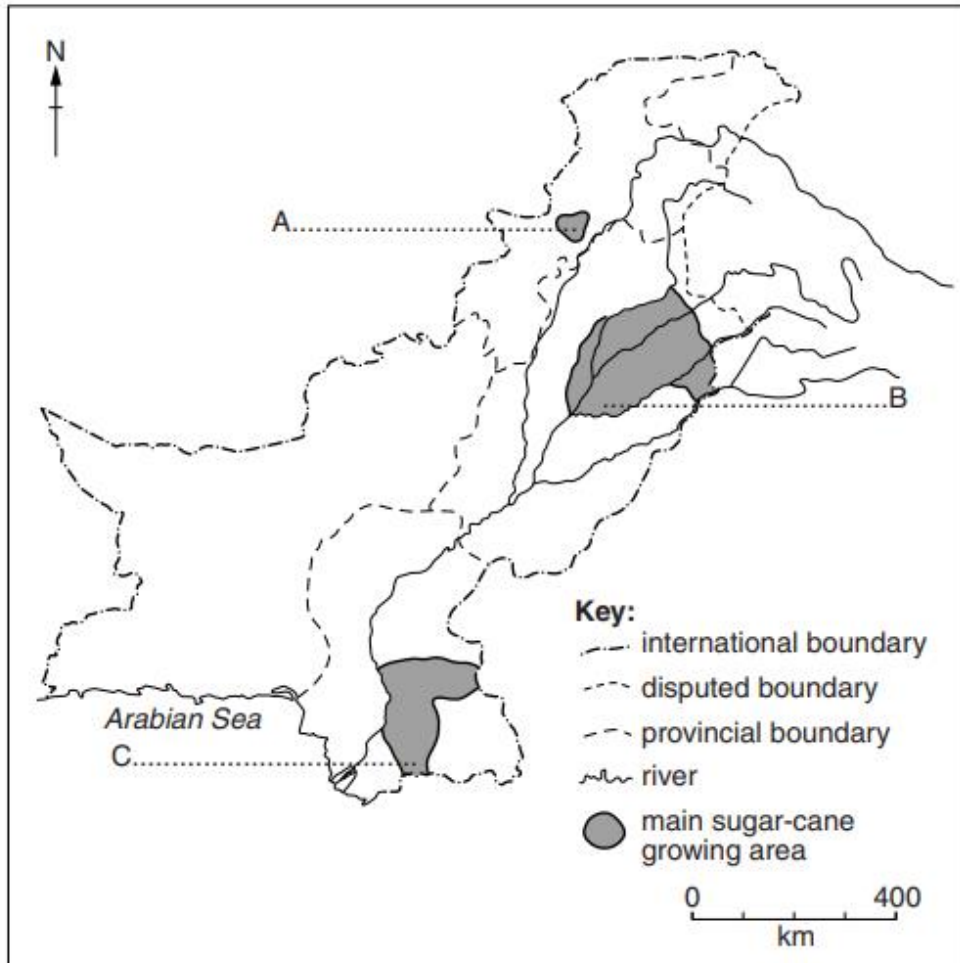


Fig. 1

Name on the map **one** city, town or district in **each** of the areas A, B and C.

[3]

Question 9

N2013/P2/Q3/C

(c) Study Fig. 5, a map of Pakistan.

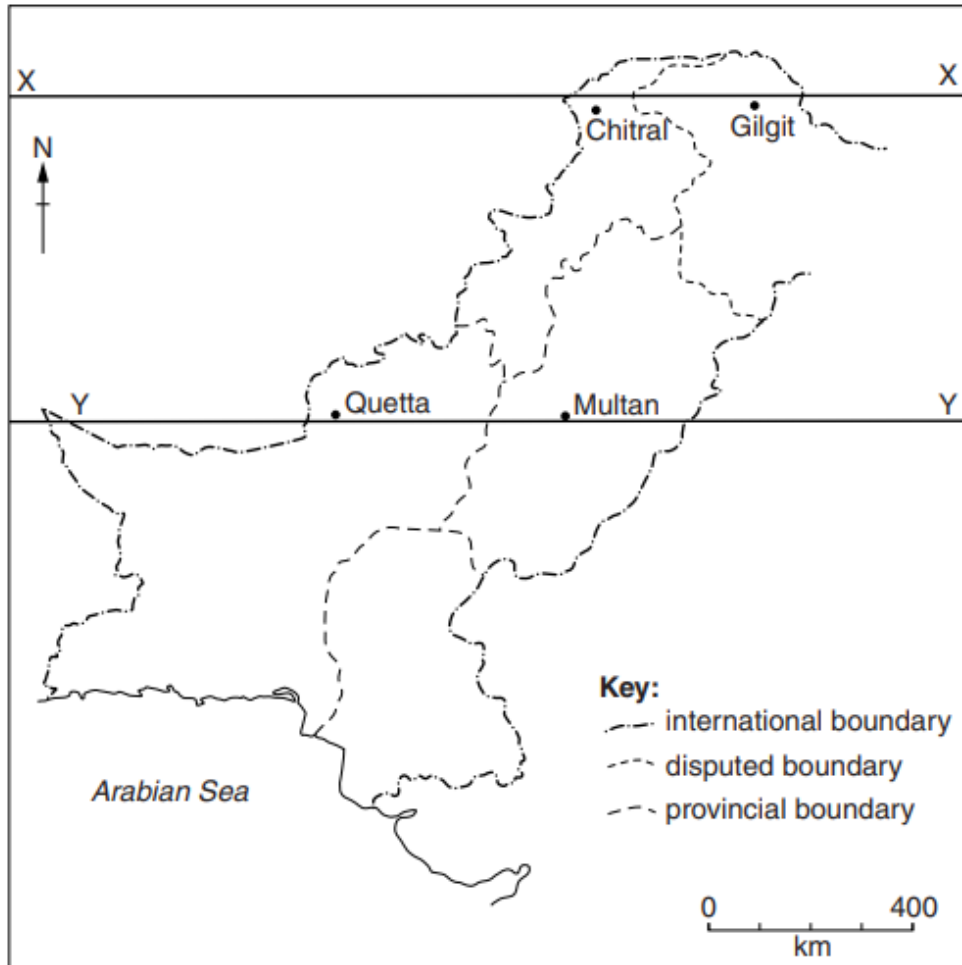


Fig. 5

(i) Give the latitude of the lines X – X and Y – Y.

X Y [2]

(ii) Explain the effect of latitude on

Temperature

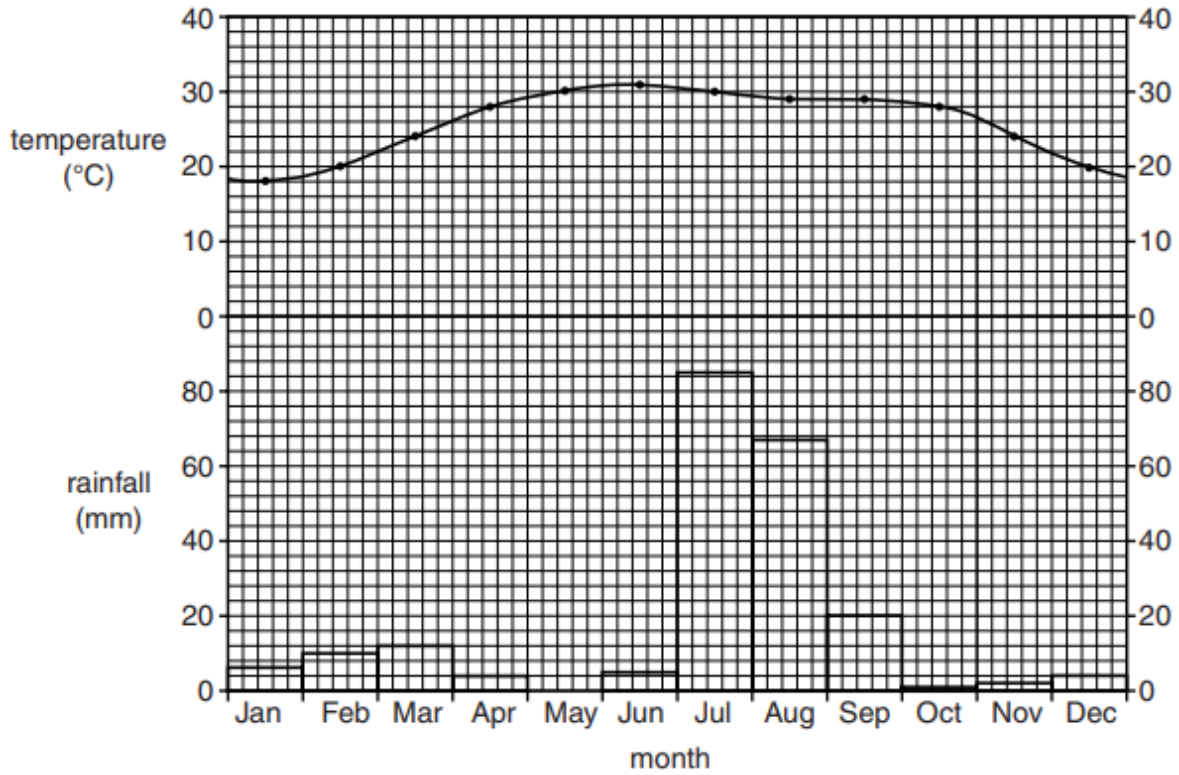
 Day length

.....
[4]

Question 10

N2012/P2/Q2/A-C

(a) Study Fig. 3 which shows the climate of Karachi.



(i) By how much does the temperature rise from January to May?
[1]

(ii) Describe the pattern of rainfall during the winter season from October to March.

[2]

(iii) With reference to Fig. 3 only, describe the climate of the months from June to September.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

(b) Explain the causes of the monsoon at Karachi.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

(c) (i) Name the violent storms that form over the sea and that may affect Karachi.

.....[1]

(ii) In which months may these occur?

.....[1]

- (iii) Explain how storms such as these may affect industry and communications in urban areas.

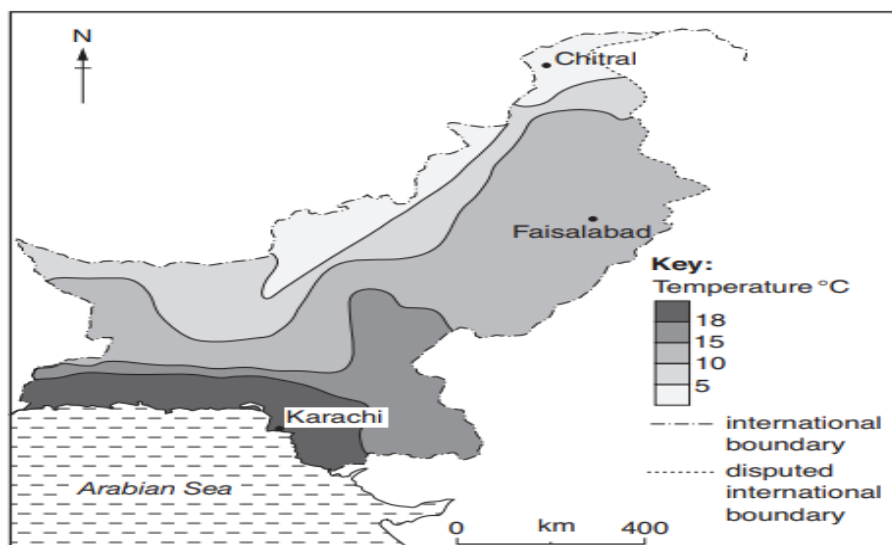
[6]

[6]

Question 11

N2011/P2/Q5/A-C

- (a) Study Fig. 8, which shows January temperatures in Pakistan.





(i) What is the temperature at:

Karachi? °C

Faisalabad? °C

Chitral? °C [3]

(ii) Do the temperatures increase or decrease:

from south to north?

from east to west? [2]

(iii) Explain **two** factors that affect winter temperatures in Pakistan.

1

.....

.....

.....

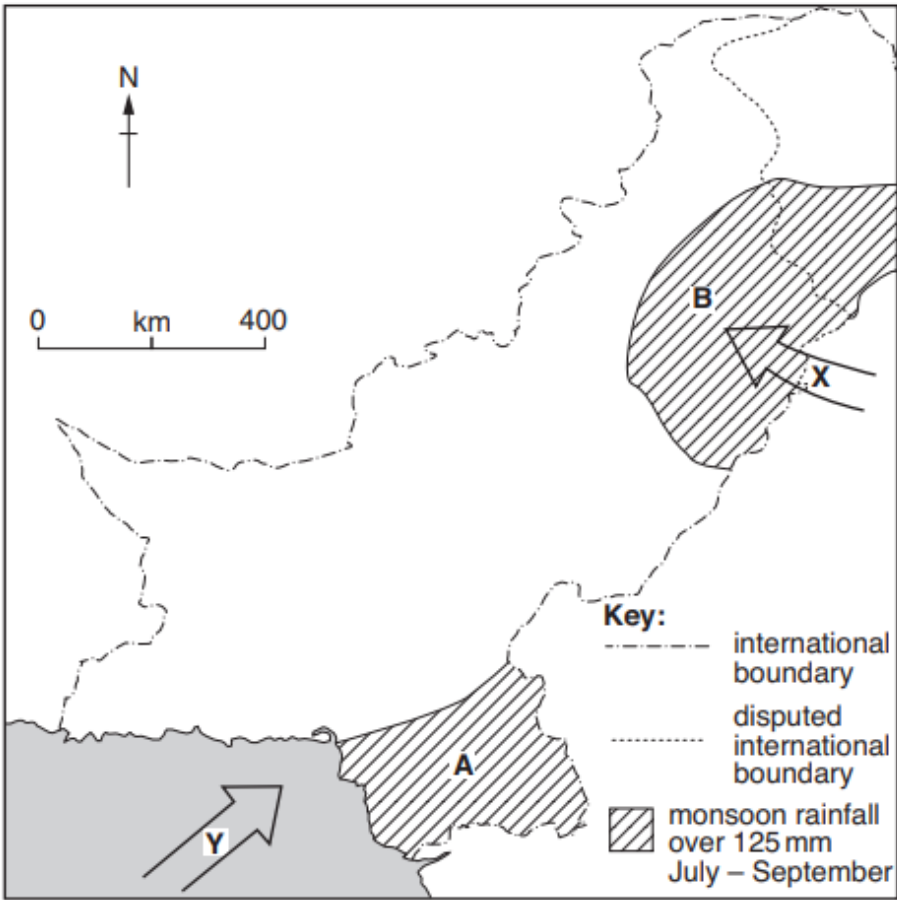
2

.....

.....

..... [4]

(b) Study Fig. 9, which shows the distribution of monsoon rainfall in Pakistan.



- (i) Name the areas of high rainfall **A** and **B**.
- A**
- B**[2]
- (ii) Name the body of water that is the source of moisture for each of the monsoon winds **X** and **Y**.
- X**
- Y**[2]
- (c) Explain why the lack of monsoon rainfall in the Southern Punjab and Northern Sindh causes problems for farmers.
-
-
-
-

[6]

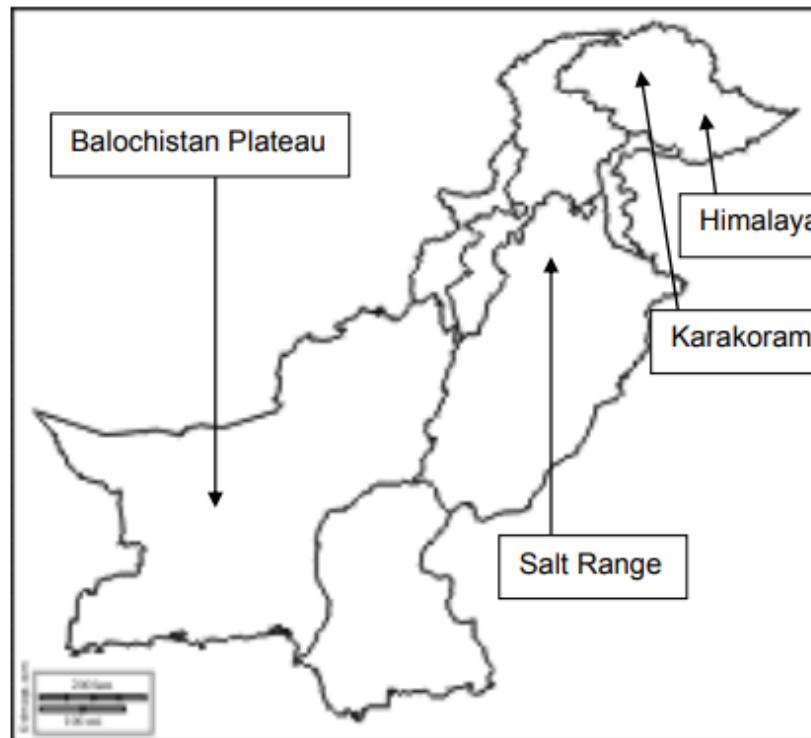


ANSWER KEY

Question 1

N2019/P2/Q1/A-B

1(a)(i)



4 @ 1 mark

1(a)(ii)

- ∞ peak
- ∞ horn
- ∞ summit
- ∞ arêtes

1 @ 1 mark

1(b)(i)

(The study or description of) features of the landscape, (which includes both natural and artificial features) / natural characteristics of land / structural features of landscape.

1 @ 1 mark

1(b)(ii)

- ∞ V shaped valleys / deep valleys / narrow valleys / gorges;
- ∞ U shaped valleys;
- ∞ Cirque / corrie / arête;
- ∞ High altitude (6000 m+) / snow-capped or high peaks / hilly / mountainous;
- ∞ Steep slopes / uneven / rugged;
- ∞ Scree;
- ∞ Bare rocks / rocky / barren;
- ∞ Snowfields / glaciers;
- ∞ Parallel ranges;
- ∞ High passes (Khunjerab / Shandur / Lawarai);
- ∞ Rivers / streams / rapids / waterfalls.

3 @ 1 mark

**Question 2****N2017/P2/Q2/C(i-ii)**

2(c)(i)	A = Quetta B = Hyderabad	2 @ 1 mark
2(c)(ii)	∞ EITHER Balochistan / Tharparkar / Thar Desert / Kharan Desert / Zhob Desert / Cholistan Desert / Chagi Desert / Makran Desert; ∞ OR a named district in Balochistan: Awaran / Barkhan / Bolan / Chagi / Dera Bugti / Gwadar / JhalMagsi / Kachi / Kalat / Kech / Kharan / Khuzdar / Kohla / Lasbela / Loralai / Mastung / Musa Khel Bazar / Nushki / Panjgur / Piskin / Sherani / Qila A Saifullah / Sibi / Wazuk / Ziarat / Zhob; ∞ OR a named mountain range: Suleiman Range / Chaghi Range / Central Brahui Range / Toba Kakar Range / Makran Range / Kharan Range / Pab Range / Kirthan Range.	1 @ 1 mark

Question 3**N2017/P2/Q4/A**

4(a)(i)	A 64°E B Hab C Thal	3 @ 1 mark
4(a)(ii)	∞ Flat or gentle sloping land; ∞ Lower Indus Plain / low altitude; ∞ Flood plain / active floodplain (bet) / old floodplain; ∞ Delta; ∞ Limestone cliffs at Hyderabad (Ganjo Takkar Hills) / escarpment / cuesta; ∞ Doab / sand dunes (tibbas); ∞ Piedmont plains with alluvial fans.	3 @ 1 mark
4(a)(iii)	∞ Heavy (high) rainfall / monsoon rainfall; ∞ Monsoon winds (strong wind) / SW monsoon / weather pattern from India / Arabian Sea; ∞ Rapid snow melt (in Himalayas / Karokoram / Hindu Kush / Tibet); ∞ Melting of glaciers (in Himalayas / Karokoram / Hindu Kush / Tibet).	2 @ 1 mark

Question 4**N2017/P2/Q5/A,C**

5(a)(i)	∞ Season / seasonal; ∞ Seasonal wind / weather pattern; ∞ Short period of heavy rain / a wet season (Jul to Sept).	1 @ 1 mark
5(a)(ii)	∞ Rainfall concentrated in Jul–Sept / wet season Jul–Sept; ∞ Little rainfall Oct–Jun / dry season Oct–Jan / Apr–May; ∞ High annual temperature / 30 °C–34 °C; ∞ Highest temperature in Jun just before wet season starts.	2 @ 1 mark
5(a)(iii)	∞ July low pressure on land / central Asia. December high pressure on land / central Asia or July lower pressure on land / central Asia than December;	



	∞ July moist air / rain bearing winds from sea / Indian Ocean / Bay of Bengal: December dry winds blow from land to sea / winds reverse from July SW to December NE; ∞ July tail end of monsoon winds reach northern / north-eastern Pakistan / December little moisture reaches eastern / north-eastern Pakistan; ∞ July has high (higher, warmer) temps with more humidity / December has low (lower, cooler) temps with less humidity. 2 @ 1 mark
5(c)(i)	Quetta / Gilgit 1 @ 1 mark
5(c)(ii)	∞ Difficulty with cost of obtaining heating fuel / gas; ∞ Unable to farm / grow crops / less income from agriculture / transhumance; ∞ Difficulty travelling by road / rail / air due to named adverse weather, e.g. snow / fog / landslides / ice / slippery roads; ∞ Loss of telecommunications / electricity due to heavy snowfall; ∞ Isolated / cut off from lowland areas; ∞ Danger of death from cold / hypothermia, especially for elderly / children; ∞ Requires adaptations to clothing / housing; ∞ Income from named tourist opportunities, e.g. mountaineering, rock climbing; ∞ Fewer mosquitoes / biting insects / diseases, e.g. malaria; ∞ Encouragement of small-scale cottage industries. 4 @ 1 mark

Question 5

N2016/P2/Q1/A

(a) Study Fig. 1 which shows the distribution of monthly rainfall in Karachi.

(i) **A** For how many months does Karachi experience less than 10 mm rainfall?

B Estimate the total rainfall in Karachi for the period July to September. [2]

A 7 (may simply list the 7 months)

B 173 mm *Tolerance 171–175 mm*

(ii) **Describe briefly the climatic region in which Karachi is located.** [1]

Arid / coastal (maritime) / warm summer, mild winter

(iii) **What is the main source of rainfall in Karachi? From which direction do the rain-bearing winds come?** [2]

Source: [Secondary] monsoon

Direction: SW

(iv) **Describe the effects of tropical cyclones on cities such as Karachi.** [4]

Widespread / great / huge / much / many / a lot of – damage

[Flash] floods / blocked drains / sewers

Lives lost / injuries / people missing

Damage to / loss of homes / belongings / slums

Damage to named transport – e.g. roads, railways, ports, airports so people unable to get to work

Damage to named services – e.g. schools / hospitals / clinics



Damage to workplaces / industry - e.g. the fishing industry destroyed so no source of income or loss of income / disrupts exports
 Loss to local economy – e.g. through damaged industry / cost of rebuilding / loss of jobs
 Damage to transmission lines / power stations / lack of power
 Damage to communication – e.g. lack of telecommunications / telephone lines / internet / social media
 Shortage / contamination – drinking water / food causing disease to spread

Question 6**N2015/P2/Q2/C**

- (c) (i) A. From the list below, circle one place which regularly experiences the highest temperatures in June in Pakistan.
 B. Which range best describes the highest temperatures recorded? Put a tick in one of the boxes below. [2]
 A. Accept either Larkana or Jacobabad 1 mark
 B. 52–54 C 1 mark
- (ii) Explain why the place you have named in (i) is the hottest place in Pakistan. [2]
 Does not have the cooling effect of altitude
 Far from moderating effects/maritime influence from sea
Lack of cloud cover/clear skies
 High angle of sun
References to equator = 0
- (iii) Describe the effects on people of living in extremely hot climates. [3]
 Difficult working conditions
 People have to stay indoors / stay in shade / cannot stay outdoors too long
 Heat-related deaths
 e.g. heatstroke/heart attack/sunstroke/skin cancer/dehydration
 Difficulty storing water
 Need to avoid dehydration by drinking more water
 Requires adaptations to clothing to keep cool
References to nomadism = 0

Question 7**N2014/P2/Q3/A**

- (a) Study Fig.3, a graph showing rainfall in Dir, Khyber Pakhtunkhwa.
- (i) What is the minimum rainfall, and when does it occur? [2]
 50–52 mm
 October
- (ii) What is the maximum rainfall, and when does it occur? [2]
 253 / 254mm
 March
- (iii) For how many months between October and June is the rainfall above 80mm? [1]
 6
- (iv) Give two causes of high rainfall between October and June at Dir. [2]
 Western / winter depressions / disturbances
 Relief rainfall
 Convectional rainfall / currents
 Thunderstorm

- (v) What is the main cause of summer rainfall at Dir? [1]

Monsoon

Question 8 N2013/P2/Q1/B

- (b) Study Fig. 1, a map showing the main sugar-cane growing areas.
Name on the map one city, town or district in each of the areas A, B and C. [3]

A Peshawar/Charsadda/Nowshera
B Faisalabad/Sargodha/Jhang/Kasur/Lahore/Gujranwala/Sheikupura
C Badin/Sanghar/Hyderabad/Mirpur Khas

Question 9 N2013/P2/Q3/C

- (c) Study Fig 5, a map of Pakistan.

- (i) Give the latitude of the lines X – X and Y – Y [2]

X – X 36 °N
Y – Y 30 °N

- (ii) Explain the effect of latitude on temperature and day length. [4]

Temperature

Greater heating/warming effects lower latitudes/nearer equator/lower heating/cooling effect higher latitudes

Lower latitudes more direct rays of the sun (Accept converse)

Higher or lower angle of the sun/high latitude lower angle of sun/low latitude higher angle of sun

High latitudes less insolation/more rays absorbed by the atmosphere/rays spread over larger area(Accept converse)

Day length

High latitudes days shorter in winter and longer in summer/the higher the latitude the shorter the days in winter/low latitudes days and nights more equal in length

Earth is tilted on its axis

Hemisphere experiencing summer points towards the sun / N hemisphere points toward sun in summer and away from sun in winter

Question 10 N2012/P2/Q2/A-C

- (a) Study Fig. 3, showing the climate of Karachi.

- (i) By how much does the temperature rise from January to May? [1]

12°C

- (ii) How does the amount of rainfall change from October to March? [2]

Increases

Steady / constant / regular

1 – 12mm / by 2mm per month

- (iii) With reference to Fig. 3 describe the climate of the months June to September. [4]

Temperature

High / warm hot

29 – 31°C / average 30°C

Highest in June



Little change in temperature

Rainfall

High (accept July-September)

20 – 85mm

Large increase in July / July max

Decreasing after July

Total 170-185 mms

Allow a mark for 'temperature drops (in July) when rainfall increases'

Question 11

N2011/P2/Q5/A-C

(a) Study Fig. 8, which shows January temperatures in Pakistan.

(i) What is the temperature at: [3]

Karachi – over 18/ any figure between 18 and 30

Faisalabad – 10–15 or any figure between these

Chitral – 5 or under, or any figure from –10 to + 5

Or credit a temperature within the range

(ii) Do the temperatures increase or decrease: [2]

A from south to north – decrease

B from east to west – decrease (allow increase only if stated 'in the south')

(iii) Explain two factors that affect winter temperatures in Pakistan. [4]

Insolation / angle of the sun

As the overhead sun moves to the southern hemisphere / over Tropic of Capricorn, rays spread over a larger area

Altitude / height of the land

As this increases temperatures decrease

Air is less dense so holds less heat / heat radiated from the surface decreases with altitude

Continental / maritime effect

Land loses heat in winter

No moderating sea winds

2 marks for each factor

(b) Study Fig. 9, which shows the distribution of monsoon rainfall in Pakistan.

(i) Name the areas of high rainfall A and B. [2]

A – South / lower / south-east Sindh

B – North / upper / central Punjab

(ii) Name the body of water that is the source of moisture for the monsoon winds X and Y. [2]

X – Bay of Bengal

Y – Arabian Sea



- (c) Explain why the lack of monsoon rainfall in the Southern Punjab and Sindh causes problems for farmers. [6]

Poor crop growth / difficult to grow crops

Low profits / incomes / farm economy

Unreliable / variable rainfall

Little or no other sources of rain / western depressions, relief etc.

Low humidity

High evaporation / evapotranspiration

Due to high temperatures

Need for irrigation / expensive to irrigate / depends on rivers and canals

Irrigation water already used by North Punjab and other users

Poor farmers cannot afford tubewells etc.

Can be soil erosion / blowing



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